TEXTILE BULLETIN

VOL. 59 OCTOBER 1, 1940 NO. 3

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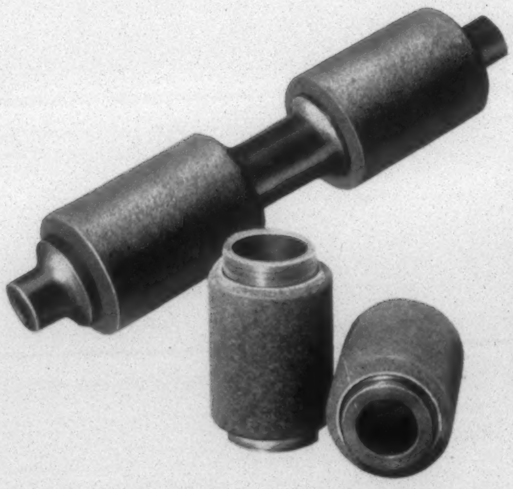

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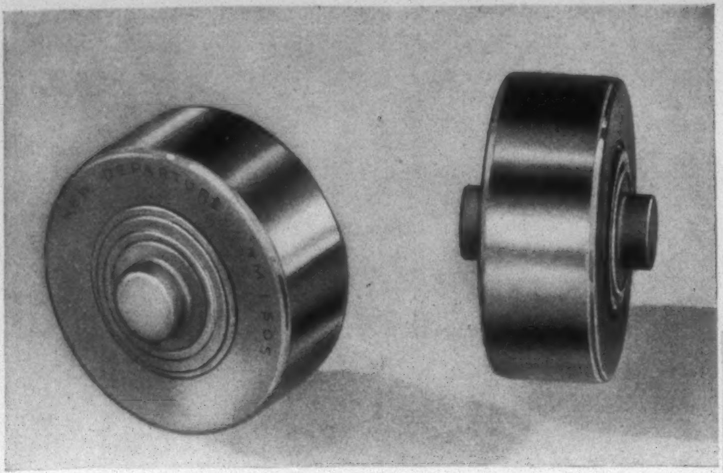

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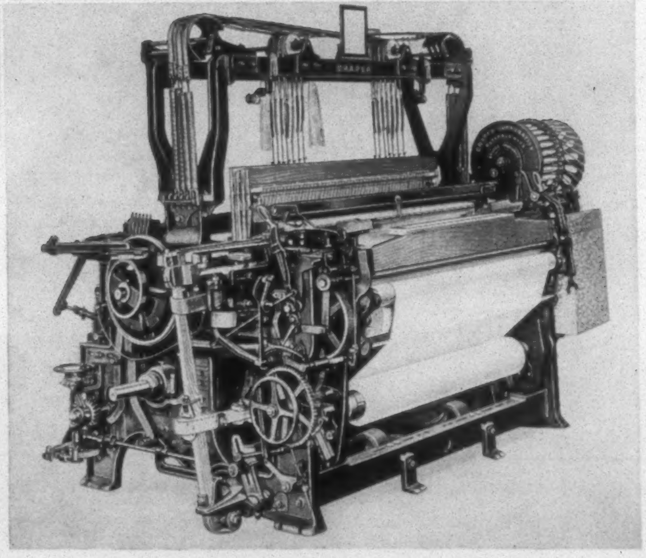

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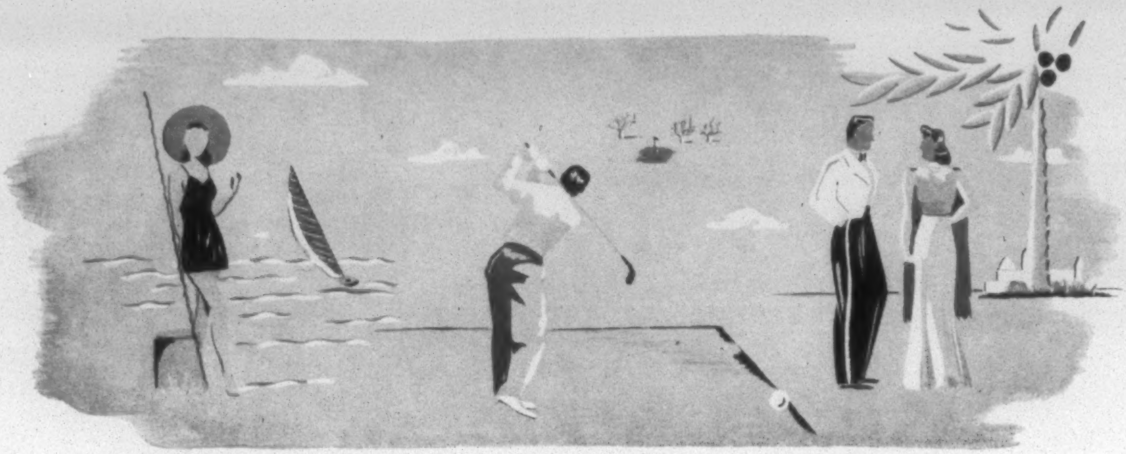

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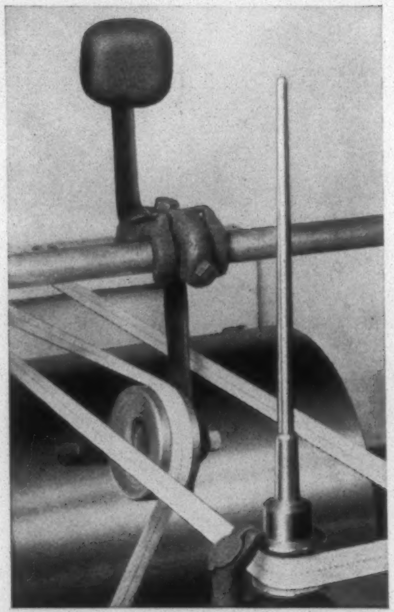

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TEXTILE BULLETIN

MEMBER AUDIT BUREAU OF CIRCULATIONS

Vol. 59 October 1, 1940 No. 3

200 Years of the Cotton Spinning Machine

Part II

IN THE SEPTEMBER 15TH ISSUE THE EVOLUTION OF THE SPINNING FRAME WAS TRACED FROM THE SIMPLE SPINDLE THROUGH THE HAND SPINNING WHEEL, FLYER SPINDLE, TREADLE SPINNING WHEEL, MECHANICAL DRAFTING, FIRST SPINNING ENGINE. THIS ISSUE TRACES THROUGH THE WATER FRAME, SPINNING JENNY, MULE, SELF-ACTING MULE, AND RING FRAME.

The Waterframe

For many years the invention of Lewis Paul to draft with rollers had been out of use, at least it was not in general use and it seemed nearly forgotten. Then in 1769 came the patent of Richard Arkwright, originally a barber, which took up the drafting with rollers. Baines says poetically, " . . . The invention had disappeared, like a river that sinks into a subterraneous channel, and now rose again under the fortunate star of Arkwright. . . ." But the patent of Arkwright brought no striking novelty and in any case, as stated in the patent specification of Lewis Paul in 1738, it was already in the time of Lewis Paul that drafting with rollers was known, patented and applied.

It is surprising that the patent of Arkwright of 1769 was not rejected, since his specification ". . . from the bobbin . . ."—he means the roving bobbin—". . . it passes through a pair of wooden rollers to the drawing rollers and by one pair of rollers moving quicker than the other, draws it finer for twisting which is performed by the spindles . . ." brings as a new feature only the application of three lines of rollers instead of two as applied by Lewis Paul. That, in principle, the use of drawing rollers was not new was stated, *e.g.*, by Thomas High, who said at the case of Arkwright before the King's Bench in 1785 regarding a carding engine, that he had used drafting rollers as early as 1767. The above-mentioned patent regarding a carding engine dating 1775 was abolished in 1785 at the King's Bench. The first patent of Arkwright in 1769 could not be abolished as in the case of 1785 as it had already expired, namely, in 1783. When Arkwright could not claim actual invention, his practical sense, however, brought ideas and inventions to perfection and to practical use; it is in this respect, that the cotton industry is under an obligation to him.

Arkwright, who became a very rich man, had his first mill in Nottingham driven by horsepower, and his second mill in Cranford by water-power. The application of water was very successful and in the zenith of Arkwright, his machines were called "water frames" and their yarns "water twist," an expression that is still in use today to designate hard twisted yarns for twist and warp purposes. It may be added that steam was only used in 1785 for the first time to drive cotton mills. This was done in 1785 at the mill of Messrs. Robinson, in Papplewhich, Nottinghamshire.

Yet the waterframe was far from satisfactory. James Hargreaves, originally a weaver, dropped the system of drafting with rollers and returned with his "spinning Jenny" patented in 1770 back to the system of drafting between delivery rollers and spindle or spool, a system that had already been mentioned by Lewis Paul as an alternate possibility of drafting in his specification of 1938.

The delivery mechanism was in the spinning Jenny mounted on a carriage that moved to and from the stationary and vertically mounted spindles. The delivery implement was a kind of clasp that held the threads fast during drafting and twisting; when a new draw had to be delivered, the clasp was opened. The spinning motion was hence again periodical as in the case of the hand spindle and hand spindle spinning wheel before the invention of the flyer spindle. The processes were delivering, then drafting and twisting and finally winding.

The spinning Jenny had the advantage of allowing a very reduced load or tension on the thread which permitted the spinning of unusual fine and soft twisted yarns for weft, muslins and for hosiery. Yarns spun with the water-frame of 1769 or the frame of 1738 were only coarse and hard twisted. On the other hand, the spinning working intermittently, produced less than water frames. The spinning Jenny was also only driven by hand and not by water or horsepower and hence with a modest speed. Yet spinning Jennies were soon widely used since they permitted the spinning of qualities of yarns that could, up to that time, not be spun otherwise.

The Mule

But the possibilities of new spinning machines were not yet exhausted. Samuel Crompton, a weaver who himself was accustomed to spin on a spinning Jenny of Hargreaves', combined in about 1779, the system of drafting with rollers as he knew it from the waterframe of Arkwright with the system of twisting as he knew it from the spinning Jenny of Hargreaves'. A poem of those days said: ". . . The force of genius could no further go, to make a third, he joined the other two . . ." The new construction was called the mule, with reference to the two borrowed elements; the name came not from the system of driving by mules, since this method was known long before the time of Crompton and was not new.

The peculiar feature of the Crompton mule was the use of a stationary delivery and the fixing of the spindles in a carriage that moved to and from the delivery. In the spinning Jenny the delivery was moved to and fro on a carriage and the spindles were stationary. The system of mules also worked intermittently like the spinning Jennies. A transitional construction was the mule Jenny, a machine with a movable carriage, containing the spindles, whereas the delivery implement was the usual clasp of the spinning Jenny. But this machine was soon surpassed by the mule.

It was the mule that finally gave the great impetus to the textile manufacture in general and the cotton industry in particular. The mule allowed the spinning of cotton yarns as fine as desired. Cotton could also be raised in increased quantities, a development which might have been impossible with any other textile material. Parliament voted in 1812 £5,000 to the benefit of Crompton, for his achievement and the service which his mule rendered to England. Later when Crompton had lost his fortune, a public subscription was made to which foreign spinners in France, Switzerland, etc., also contributed their share in appreciation of his invention.

Crompton had not patented his mule. On one hand there was a great interest in improved machinery and the services thus rendered were also recognised by some. But on the other hand there was also the odious dislike of any new invention, especially on the part of the masses and it happened more than once, that machinery was destroyed by the mob, and that even the inventors were threatened and killed; already John Kay, the inventor of the fly shuttle had to escape abroad and Hargreaves had to move to another place in England to save his life. The authorities in England did very little to oppose the conspiracy against the use of machinery which was known under the name of "Luddism." A historian of those times had to state, ". . . a large mill at Birkacre near Chorley was destroyed by a mob in the presence of a powerful body of police and military, without any of the civil authorities requiring their interference to prevent the outrage. . . ."

Thus technical progress in the 18th century was not at all in all cases an easy and profitable affair; it was accompanied in many cases by persecutions and danger, by sorrows and troubles, by peril to the inventor's life. We should feel more than grateful to the inventors of those days, we should admire them. But in spite of the difficulties, destiny helped to make the new inventions survive and prosper.

The Self-Acting Mule

Several inventors helped to make the mule more perfect, especially to make it not only mechanical in performing the different functions, but also automatic. We have to mention here the improvements of William Strutt of Derby, in 1790, and William Kelly of Lanark, in 1792. The latter, in 1790, drove the mule with water power, the mule having been first driven by hand like the spinning Jenny, then from a horse-capstan.

Finally in 1825 and 1830, Mr. Roberts, of the Manchester machine-making firm Sharp, Roberts & Co., patented mules working entirely mechanically for all spinning processes, that is drafting, twisting, backing-off and winding. Backing-off means the process of rewinding the length of yarn forming coils from the spindle nip to the cop during the drafting and twisting operation.

Now it became possible to spin yarns as fine as 250's; in 1835 cotton yarns as fine as 350's were being spun. When spinning with the original spinning Jenny of Hargreaves, the highest counts were 60's, in exceptional cases 80's. With the water frame of Arkwright, the usual counts were 20's, and in the best conditions only as fine as 40's. But in 1738 or thereabouts, with the frame of Lewis Paul, spinning of cotton was just possible up to 15's for the bulk of yarns, and in particular cases up to 20's and 24's. The counts mentioned express the length of yarn to a certain weight, that is number of hanks or skeins of 840 yards to one English pound. The higher the length, the higher the count. This system is still in use today for counting cotton yarns.

At the same time, the number of spindles could be greatly increased. The model of Arkwright's spinning frame shows only four spindles; the first model of the spinning Jenny of Hargreaves' has eight spindles, increased later to twelve and sixteen spindles, then to twenty and thirty spindles. The first mules had about 100 spindles; then the number was increased to several hundreds and also made double, that is, there were a carriage and drawing rollers to each side of the head-stock containing the controlling machinery. Even in 1835 mules with 800 to 1,000 spindles were in use, one spinner being able to manage two mules of 1,600 to 2,000 spindles with the help of a piecer, a scavenger or creeler boy.

The Throstle Frame

But the continuously working spinning machine invented by Lewis Paul and brought into general use by Richard Arkwright was not abandoned completely; the water frame was also improved in many respects. The gearing was simplified and refined, the power that was needed could be reduced and at the same time, the speed augmented. The improved machine, probably from its singing sound, produced by the rapidly revolving flyer, was called the throstle frame.

The yarns from the throstle frames were strong and very adaptable for the production of calicoes, a weave originally imported from the East Indies; the throstle frame yarns were especially suitable also for the power loom invented in 1785 by the Reverend Dr. Edmund

(*Continued on Page 38*)

Erecting, Overhauling and Fixing Looms

By Frank D. Herring

Following is the seventh chapter of a series of articles on loom fixing and loom maintenance by a practical mill man. Accompanied by illustrations of all portions of a loom, this series will go into minute detail explaining the various motions and their settings, timings, repairs, etc.

Part 7

Setting the Take-Up

FIRST make sure that the take-up roll is lined and leveled properly, and the take-up roll bearings securely tightened. The take-up roll should turn freely without any binding whatsoever. A trial shaft should be used when lining the take-up roll bearings; set all the gears in the take-up chain as deep as possible, in mesh, to avoid binding. Also be sure that contacting gear teeth mesh square, in perfect alignment with each other.

There are several different types of take-up motions, but they all have the same things in common so far as proper setting or adjusting is concerned; the take-up roll and all the gears contained in the take-up motion must work free of any binding whatsoever. When all the gears are meshed deep enough and will turn freely, that is about all one can desire. All take-up motions have some kind of connecting arrangement with the filling motion and the purpose of this connection is to disengage the take-up whenever the filling breaks and the filling fork engages to stop the loom off. This is necessary to avoid thin places being made in the cloth when the filling breaks while the loom is running, because the shuttle will pass through the sheds from one to three times after the filling breaks, granting everything is set up properly. This disengaging arrangement should be set with the shuttle in the battery end of the loom, and the filling motion hook in contact with the fork holder loop, and the filling cam follower end on the highest point of the filling cam, with the filling fork slide pulled all the way back in position to stop the loom off. (All the parts referred to are shown in Figure 23.)

When the above mentioned is done, tighten the take-up clutch lever link arm, then adjust the take-up lever links to a point where the bottom link will depress the take-up clutch lever and disengage the clutch, thereby stopping the action of the take-up (the take-up motion parts referred to are shown in Figure 24).

The change gear is meshed in with the intermediate gear and the pinion gear attached to the clutch pinion gear. Sometimes when an extremely high take-up roll is run, and a small change gear is used, the change gear will

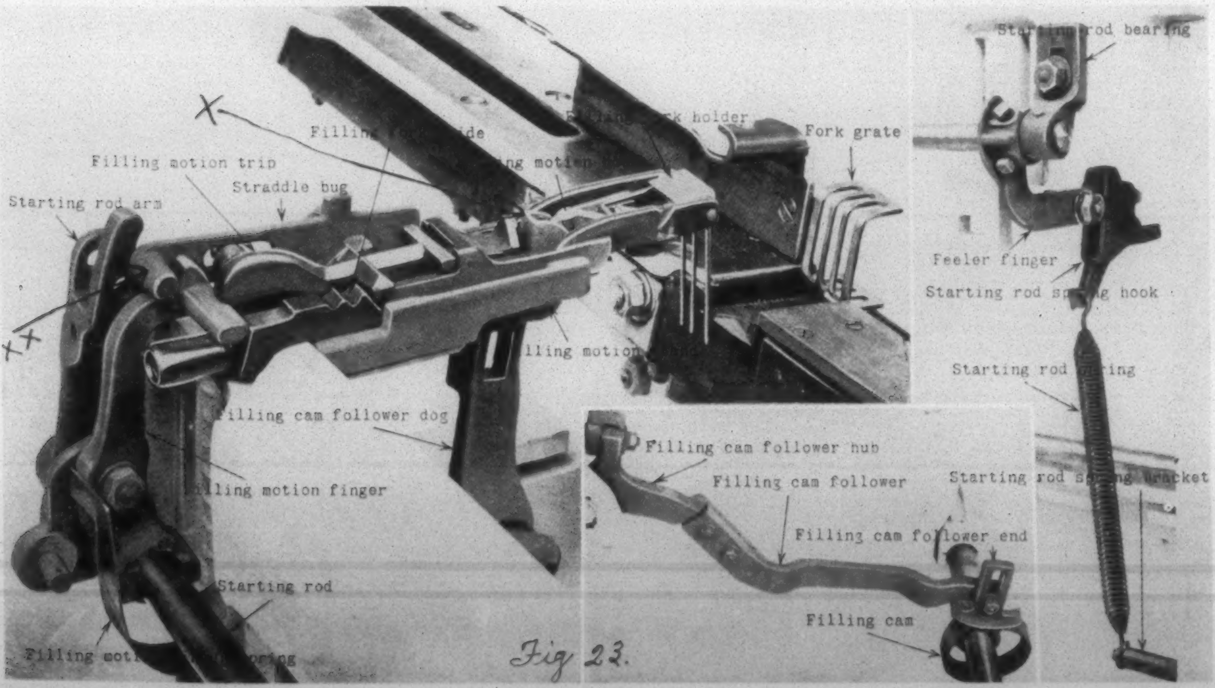

Fig 23.

have a tendency to ride and jam on top of the clutch pinion gear pinion. This trouble can be overcome by using a longer clutch pinion gear bracket or by the use of a larger pinion gear on the clutch pinion gear. Of course, when a larger pinion is used the gear ratio will be changed and will have to be taken care of by changing the size of some of the other gears in the chain. All studs and bearings throughout the take-up motion should be kept well oiled at all times. They must work free of any binding whatsoever or the take-up cannot function properly, and unless the take-up functions properly, thick and thin places, uneven, wavy cloth will be the result. More will be said about the take-up when the filling motion is covered.

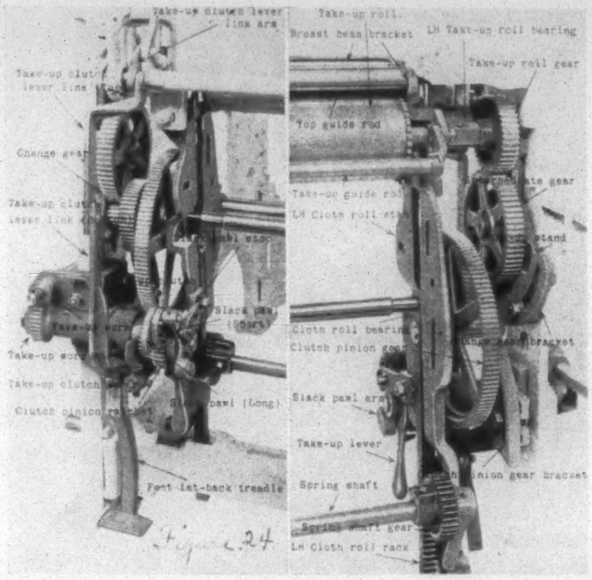

Figure 24

Setting the Cloth Traverse

The cloth traverse is, as a rule, a very much neglected part of the loom. A very small percentage of the loom fixers throughout the country know the rules for setting the cloth traverse in order to make it function properly.

To set the cloth traverse, proceed in the following manner: First, make sure that the cloth roll blocks, attached to the cloth roll racks, are in good condition. Then loosen both of the spring shaft gears, allowing both of the cloth roll racks to drop to their lowest positions. Put the cloth roll in place and adjust the cloth roll stands to where the cloth roll will have about ⅛ of an inch clearance lengthwise between the stands, then tighten the stands securely. Remove the cloth roll and turn the spring shaft gears by hand, running the cloth roll racks up to the top, and make sure that the racks do not bind at any place. Replace the cloth roll, tighten the spring shaft form and the spring shaft brace.

Turn the worm crank backwards, in direction to lower the cloth roll, as far as it will turn, or until the spring shaft stop contacts the stops on the spring shaft brace and the spring shaft worm wheel.

Make sure that the cloth roll spring and the spring shaft collar are in place as shown in Figure 25, then tighten the spring shaft collar and the spring shaft gears. Turn the worm crank to run the cloth roll up to top position against the take-up roll, and adjust the spring shaft gears, if necessary, to a point where the cloth roll will be on parallel line with the take-up roll, touching the take-up roll its full length.

(*Continued from Page 29*)

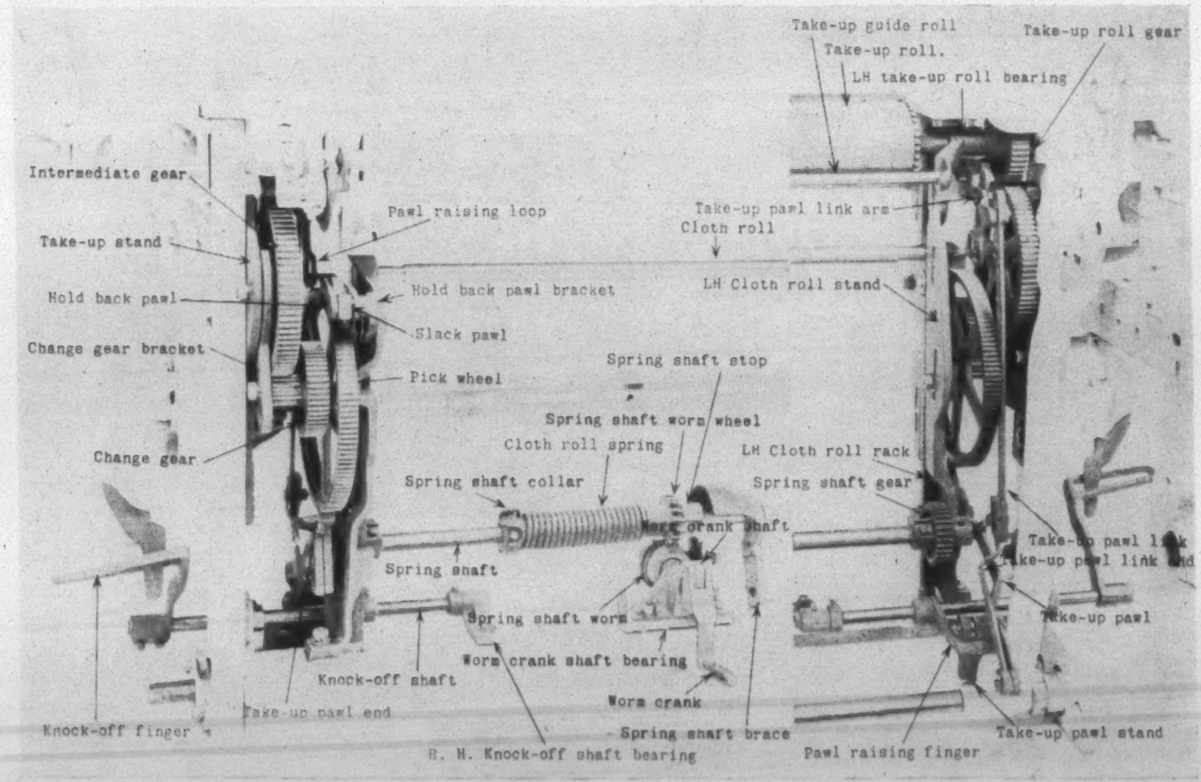

Fig. 25

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Textile Mill Production Formulae

By John T. Kersey

Following is the first of a series of articles on textile mill production formulae, written by a man who has been and is actively engaged in the manufacture of cotton yarns. While there is little new that could be said about methods of computing production, speeds, etc., in a textile mill, it is sometimes refreshing to see another man's viewpoint on these matters, and a different method of presentation.

Speed Formulae

A TREATISE giving formulae for determining the production of machinery should in the author's opinion include the necessary information for ascertaining the speeds and pulleys required of the shafts that run the machines, as very little progress could be made with the production formulas without the necessary knowledge of the factors that govern the speed of the machines.

Speed of Shafting and Pulleys

When motion is transmitted from one shaft to another by a belt running on pulleys, the speed (revolutions per minute) of the drive shaft, and the diameter of the drive pulley governs the speed of the belt (feet per minute) and also the speed (feet per minute) of the rim or circumference of the driven pulley. The speed of the driven shaft is dependent on the diameter of the driven pulley. If both pulleys are of equal diameter, both the shafts will run the same speed if the belt does not slip but if the pulleys are of different diameters the speeds (r.p.m.) will be different. However, the speed of the rim of each pulley will be the same (feet per minute) as the belt. When the diameter of the drive pulley is increased the speed of belt increases and of necessity the speed of the driven shaft also. The speed of the driven shaft can also be increased by reducing the diameter of the driven pulley or decreased by making the diameter larger. The speed of the driven shaft can be increased by increasing the diameter of the drive pulley or decreased by reducing the diameter of the drive pulley.

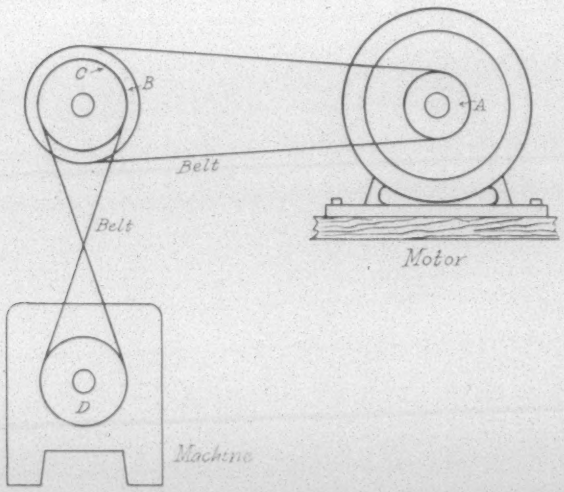

Fig. 1-A

Figure 1-A is a typical arrangement of pulleys from motor to machine where only one shaft is needed.

By using the different formulas it is possible to obtain most any information about the sizes and speed of the pulleys that may be desired.

Mechanical Problems

Speeding and Gearing Formulas

s=speed of motor 800 revolutions per minute
s.m.=speed of machine 960 revolutions per minute
a=drive pulley on motor 16″ diameter
b=Driven pulley on shaft 20″ diameter
c=Drive pulley on shaft 18″ diameter
d=Driven pulley on machine 12″ diameter

$$s.m.=\frac{a\times s\times c}{b\times d}=\frac{16\times800\times18}{20\times12}=\frac{230{,}400}{240}=960\text{ r.p.m.}$$

$$d=\frac{a\times s\times c}{s.m.\times b}=\frac{16\times800\times18}{960\times20}=\frac{230{,}400}{19200}=12''$$

$$a=\frac{s.m.\times d\times b}{c\times s}=\frac{960\times12\times20}{18\times800}=\frac{230{,}400}{14400}=16''$$

$$b=(s\times a)\div\frac{s.m.\times d}{c}=(800\times16)\div\frac{960\times12}{18}=\frac{12800}{640}=20''$$

$$c=(s.m.\times d)\div\frac{s\times a}{b}=(960\times12)\div\frac{800\times16}{20}=\frac{11520}{640}=18''$$

Speed and Gearing Formulas

The speed of gear wheels are figured the same way as pulleys except the number of teeth in the gear is used and not the diameter.

Worms and Worm Gears

A single worm moves the worm gear one (1) tooth for each revolution it makes and is counted as a one-tooth gear.

A double worm moves the worm gear 2 teeth for each revolution it makes and is counted the same as a gear having 2 teeth.

Intermediate Gears

Intermediate gears do not effect the speed but do reverse the rotation if 2 intermediate gears are between a drive gear and a driven gear.

If *a*, the drive gear, has 100 teeth, and *c*, the driven gear, has 50 teeth, *c* will make 2 revolutions for each one that *a* makes. a÷b=100÷50=2. Then if *a* makes 125 revolutions per minute *c* will make

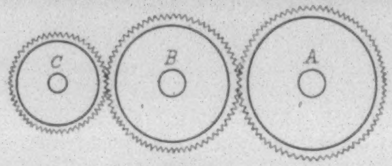

Fig. 2-A

$$\frac{125\times100}{50}=250 \text{ r.p.m.}$$

No matter how many teeth the intermediate gear *b* has it will not effect the speed, r.p.m., of the driven gear *c*.

Worms and Worm Gears, Spur Gears and Rolls

In Figure 3, E shows a measuring roll 6 inches in circumference. F drive gear 100 teeth. G driven gear 110 teeth. H drive gear 50 teeth. J driven gear 100 teeth. K single worm and L worm gear 120 teeth.

Example: If E makes 264 revolutions per minute, what will be the speed of the worm gear L?

$$\frac{264\times F\times H\times K}{G\times J\times L}=\frac{264\times100\times50\times1}{110\times100\times120}=1 \text{ r.p.m.}$$

If E is 6 inches in circumference, how many yards of cloth or paper could be run between the rolls E. M. while L made one complete revolution?

$$\frac{264\times6}{36}=44 \text{ yards}$$

Power Transmission

Pulleys and Belts

As slipping of the belts is detrimental to obtaining the maximum or possible production of machinery, it is very important that belts be kept clean, pliable and of right degree of tension to realize the greatest amount of efficiency.

It is impossible to overcome all the slip but it should be kept as low as possible by keeping the belt in pulling condition and not by extra tightness.

A cross belt of equal weight and width has considerably more power than an uncrossed belt, due to a greater arc of contact.

When a belt is selected to do a required amount of work the capacity of the belt should be at least 10 to 25 per cent greater than the work that is to be done, which will prevent slippage, deliver more poundage and lengthen the life of the belt.

Production Formulae

Delivery of the Rolls

Before attempting to calculate the production of any

(*Continued on Page 34*)

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N. C. Cotton Mfrs. To Hold 34th Meeting in Pinehurst Nov. 7-8

Charlotte, N. C.—The thirty-fourth annual meeting of the North Carolina Cotton Manufacturers' Association will be held at the Carolina Hotel, Pinehurst, N. C., on Nov. 7th and 8th. The first day will be devoted to golf and skeet shooting, with a meeting of the board of directors taking place in the evening. Business will be conducted on Friday, concluding with the annual banquet.

W. H. Ruffin, of Durham, N. C., is chairman of the committee on resolutions, which comprises James Webb, J. Holmes Davis, Jr., W. H. Suttenfield and C. C. Dawson.

Harvey W. Moore, of Concord, N. C., will act as chairman of the committee on nominations, assisted by R. A. Spaugh, Jr., and H. M. Jones.

Textile Foundation Elects Members; Clark, Dilling, Submit Proposals

Resolutions expressing their profound sorrow at the passing of Stuart Warren Cramer, former member of the Board of Directors and Treasurer of the Textile Foundation since it was created by Congress in 1930, were adopted recently at a meeting of the Board.

Three new members were inducted into office. They are Claude W. Wickard, Secretary of Agriculture; Jesse H. Jones, Secretary of Commerce and Federal Loan Administrator, and Donald Comer, of Birmingham, Ala., who was appointed on August 15th by President Roosevelt to fill the unexpired term of Mr. Cramer.

The resolution, unanimously adopted, read:

Whereas, Stuart Warren Cramer was a member of the Board of Directors and Treasurer of the Textile Foundation since it was created by Congress in 1930, and

Whereas, out of a busy life as engineer, textile manufacturer, civic and industrial leader, he gave unstintingly of his time and experience to forwarding the objectives of the Foundation, and

Whereas, his death on July 2, 1940, deprived us of a wise counsellor and devoted public servant, therefore be it

Resolved that the Directors, at this first meeting since Mr. Cramer's death, record their feeling of profound sorrow at the passing of their friend and associate; that these resolutions be spread upon the minutes of this meeting; and that expressions of deepest sympathy be conveyed to his family.

Following routine business and reports, a proposal submitted by David Clark, editor of the TEXTILE BULLETIN, and Marshall Dilling, on behalf of the Southern Textile Association, designed to extend practical research in the cotton manufacturing industry, was discussed and taken under consideration.

Frank D. Cheney was elected Treasurer. He has been a member of the Board of Directors since 1933.

Lint Goods Rail Rate Reduction Is Held Likely

Charlotte, N. C.—A proposal for reducing rail freight rates on shipments of cotton gray goods to and from finishing plants as a means of combatting truck competition was discussed by representatives of various interests here Sept. 12th.

After the conference, W. S. Creighton, traffic secretary of the North Carolina Traffic League, said the prospects for lower rail rates appeared to be good.

About 60 representatives of the textile industry, rail carriers and manufacturers' associations took part in the meeting. Among those present were agents or executives of finishing plants at Greenville, Spartanburg, Taylors, Ware Shoals, Greensboro, Kannapolis and Salisbury, representatives of converters at Philadelphia and other textile marketing centers of the East, and traffic directors of railroads.

Creighton said that truck lines had taken so much of this business because of their greater speed of delivery that railroads were endeavoring "to arrive at a schedule of lower rates which will enable them to hold what traffic of this kind they still have and which may enable them to induce the mills and shippers to give more of this business to the steam carriers."

Mill Employees Remembered in Will

Anderson, S. C.—Employees at Townsend Twine Mill here with six months or more service will receive $50 each under the terms of the will of the late Mrs. H. C. Anderson, of Anderson, whose estate was appraised at $200,000.

Lanett Employees Have Outing

Lanett, Ala.—Approximately 700 employees of the spinning room of Lanett Mill, of the West Point Mfg. Co., and invited guests motored to Warm Springs for an all-day outing and barbecue, and visit to the fish hatcheries near there recently.

John R. Federline, overseer, and D. C. Anderson, assistant, were in charge. Among the invited guests were R. W. Jennings, George Lanier, Joe Lanier and Mr. and Mrs. Rube Jennings.

Technologists Have Official Organ

The American Association of Textile Technologists has adopted an official organ to be known as Textile Technologist's Record.

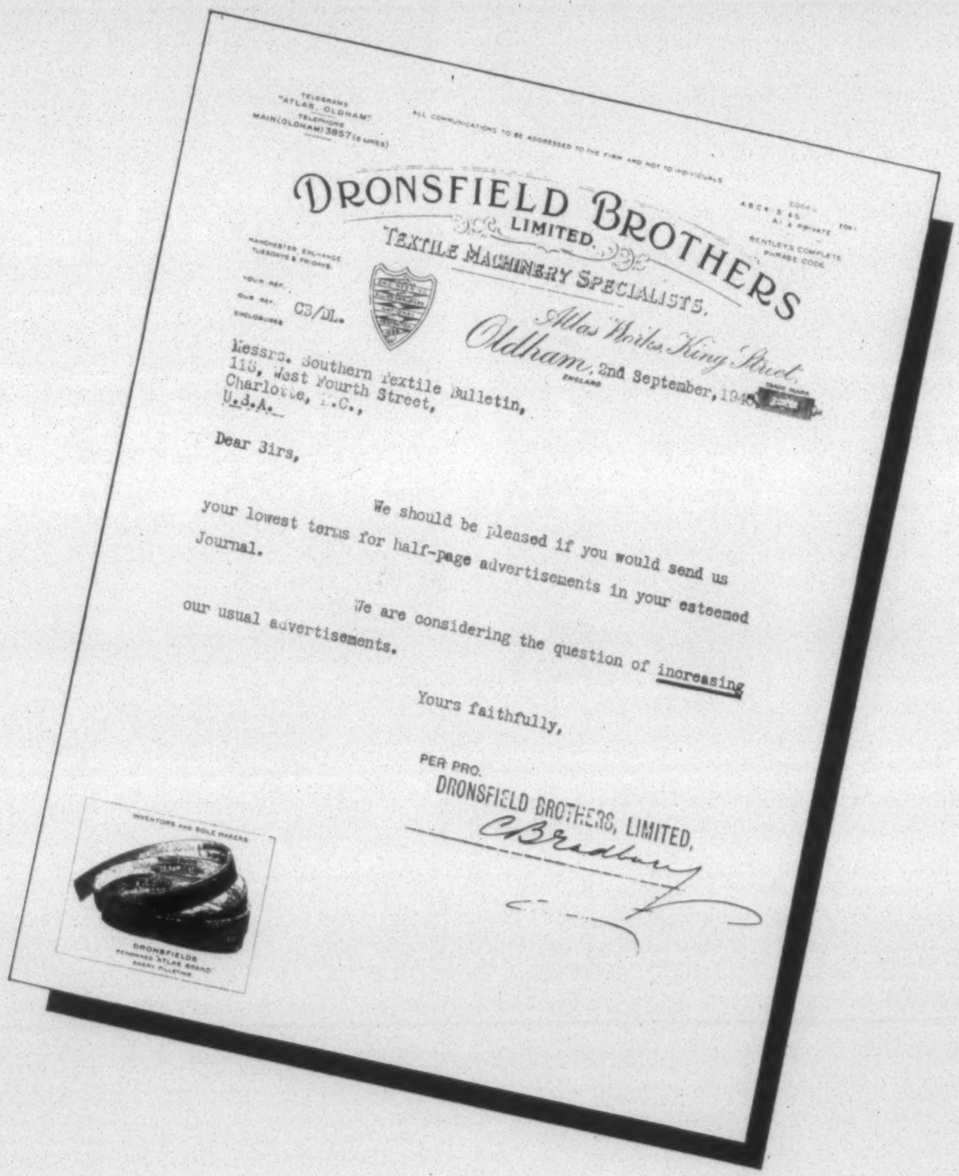
The first issue contains a greeting from Carl C. Mattmann, Jr., president of the Association, and many technical articles bearing on the textile industry. The first issue is edited by E. W. K. Schwarz.

American Cyanamid & Chemical Corp. Buys 17 Acres At Charlotte

Charlotte, N. C.—Announcement was made here of the purchase by the American Cyanamid & Chemical Corp. of 17 acres of land at a cost of approximately $30,000.

The tract adjoins the company's present plant on Wilkinson Boulevard, and is bought for probable future expansion of the concern's operations here, Hugh Puckett, Southern sales manager, said. It has a frontage of 600 feet on Wilkinson Boulevard just outside the city and was bought from Mrs. H. J. Dunavant. The company makes products for the textile finishing industry in its plant here. It has recently completed an addition to its plant in Georgetown, S. C.

A Letter From a Land Where Bombs are Falling



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ENCLOSURES

2nd September, 1940

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Textile-Finishing Machinery Co. Announces Important Appointments

Thomas Harris has been appointed general manager of Textile-Finishing Machinery Co., of Providence, R. I., and Wallace Taylor has been promoted to the position of sales manager, it was announced recently.

The ability and resourcefulness of Mr. Harris have long been recognized in the industry where his experience covers ten years as superintendent with Manville-Jenckes Corp., at Tamarack Mills Nos. 1 and 2, in Pawtucket; at Globe Mill, and then as general superintendent of the Social, Nourse and Globe Mills in Woonsocket.

After these years as superintendent, he organized the Harris Textile Machinery Co., Providence, where he developed special machinery for a number of new products in the industry.

Mr. Taylor's duties as sales manager will be largely devoted to service operations. He is well equipped for this work because of his technical schooling which began in Europe and was completed at Lowell Textile School in this country. Before joining Textile-Finishing Machinery Co., he had 15 years of plant experience in textile finishing and has observed and noted the best practices in Europe and the Americas.

Wallace Taylor

Thomas Harris

Mr. Taylor has been connected with "Textile" for a number of years and is widely known in the South, to which section he has been a frequent visitor in the past.

It is pointed out that these and other appointments indicate a new trade policy for the company. The new policy will be to co-operate in the designing and construction of special machines for individual requirements, which it is already doing, while continuing to modernize its standard lines of finishing equipment.

In this connection, an official of the company made the following statement:

"Because of competition for maximum efficiency and for more perfect production with economy, modernization of methods and machines in the textile industry develops more and more along individual lines. The 'good old days' of standard practices, of standardized machines—at standardized prices, cannot be found on today's calendar. The best of these machines are surviving; but to supplement them in almost every instance of modernizing, mill managers conceive new methods that usually mean especially designed machinery and, in some cases, the development of entirely new machines.

"Recognizing these facts, and believing that modernization begins at home, the Textile-Finishing Machinery Co. has changed its whole plan of operation to conform to these new conditions and has added, or promoted, men of proved capacity and ability to direct operations and service.

OBITUARY

W. A. WATTS

Laurens, S. C.—Maj. W. A. Watts, 92, one of the organizers of the Laurens Cotton Mill and the Watts Mills, of Laurens, died at his home recently.

Although he had been retired for several years, Mr. Watts still retained a directorship in one of the textile mills in Laurens.

BENJAMIN G. SLAUGHTER

Richmond, Va.—Benjamin G. Slaughter, 59, former president of the Tubize Chatillon Corp., died at his home Sept. 18th, of a heart attack.

Mr. Slaughter, a chemical engineer, joined the Tubize Artificial Silk Co. of America in 1923. He became president of the firm in 1929. When the firm was merged to form the Tubize Chatillon Corp. he headed the new firm until 1932, when he returned to his practice as a consulting engineer.

GEORGE N. ROBERTS

Boston, Mass.—George Newman Roberts, 65, chairman of the board of Bemis Bros. Bag Co., died Sept. 12th at a Boston hospital of heart failure. Mr. Roberts' home was in Waban, Mass.

ANGUS M. LANDER

Pelzer, S. C.—Angus M. Lander, 77, Pelzer textile official, died recently after several weeks' illness.

He was born in Lincolnton, N. C., Sept. 26, 1863, a son of the late Dr. Samuel and Laura McPherson Lander, and came to Pelzer as a young man to be associated with Capt. Ellison Smyth in the early organization of Pelzer Mfg. Co. One of the first officials, he had continued with the mill since 1883.

Mr. Lander was a valuable citizen to his community, having contributed throughout the years to the upbuilding and furtherance of the interest of the residents of Pelzer.

ROBERT H. MICKEY

Charlotte, N. C.—Robert H. Mickey, 59, well known salesman for the Alemite Co., died suddenly while in Charleston, S. C., recently. His body was returned to Charlotte for funeral services and burial was at Winston-Salem.

Mr. Mickey was well known and liked in textile circles throughout his territory.

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TIME—The New Type K cleans 50% more bobbins per minute than previous models.

SPACE—Less space for boxes, etc., is required due to increased cleaning efficiency.

MATERIAL—Improved plunger assembly prevents damage to bobbin barrels and protects the finish.

MONEY—The savings effected pay for the machine, usually in one year, always within two years.

The Terrell Bobbin Cleaning and Handling Equipment (bobbin box hoist plus conveyor) offers mills a dependable day-in and day-out bobbin cleaning service that is completely automatic, with the exception of the actual machine feeding. Full particulars will be sent on request, without obligation.

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EFFICIENT BOBBIN CLEANING

The Terrell Machine Co., Inc.

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E. W. S. Jasper, Inc., Elizabeth, N. J.	Penn. & N. J.
Geo. Thomas & Co., Manchester, Eng.	European Agt.

Personal News

B. T. Morgan is now night carder at the Riverdale Mills, Enoree, S. C.

A. E. Massey, formerly of Blue Mountain, Ala., is now with the Exposition Cotton Mills Co., LaFayette, Ala.

Harold Duncan has been promoted from night carder to assistant superintendent of the Riverdale Mills, Enoree, S. C.

J. H. Schoolfield was recently elected a member of the board of directors of the Mandeville Mills, of Carrollton, Ga.

Henry Neubert has been made a vice-president of Deering, Milliken & Co., in charge of all filament and staple fiber rayon fabrics.

Fred S. Perkerson, head chemist for Callaway Mills, was married recently to Miss Emma W. Roberts, of LaGrange, Ga.

C. L. Allison has been promoted from second hand to overseer of weaving on the night shift at the Edna Mills Corp., Reidsville, N. C.

John P. Faris has been named superintendent of the Watts Mills at Laurens, S. C., succeeding H. W. Kiser, resigned.

W. H. Hightower, president of the Thomaston (Ga.) Cotton Mills, has been made a director of the Citizen's Safety Council of Georgia.

W. Edmond Pendleton, Jr., is now production manager of the Bibb Mfg. Co.'s Columbus, Ga., plant. He was formerly with the audit department in Macon.

George A. Sloan, former president of the Cotton-Textile Institute, has been made the new president of the Metropolitan Opera Association in New York City.

W. M. Melton has resigned as general superintendent of the Green River Mills, Inc., Tuxedo, N. C., to become general manager of the Pisgah Mills, Inc., Brevard, N. C.

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Prompt Shipment All Grades on Short Notice
Suitable for Blends with Rayon or Cotton
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Write or Phone Our Southern Representative
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Howard J. Spry, N. C. State College Textile School graduate, has resigned as assistant superintendent of the Riverdale Mills, Enoree, S. C., to become superintendent of Ivey Weavers, Inc., Hickory, N. C.

Walter S. Montgomery, head of the Spartan, Startex and Gaffney Mills, in South Carolina, has been placed at the head of the "Big Gifts" committee in Spartanburg's annual charity drive.

James Walton, Jr., formerly of the Hugh Grey Hosiery Mills at Concord, N. C., has been named superintendent of the Gastonia Full Fashioned Hosiery Co., Gastonia, N. C.

B. B. Gossett, president of the Chadwick-Hoskins Co., Charlotte, N. C., and other mills in South Carolina and Virginia, has been appointed North Carolina chairman for Navy Day observance in North Carolina, succeeding the late Stuart W. Cramer.

Clarence L. Jolly, general superintendent of the Inman Mills, Inman, S. C., has resigned that position to become general manager of manufacturing for the Jackson Mills at Iva and Wellford, S. C., and High Shoals, N. C., effective the first part of October.

W. A. Hunt, who has been representing Carter Traveler Co., and Mill Devices Co., Divisions of A. B. Carter, Inc., Gastonia, N. C., in Georgia, Alabama and Tennessee, has been promoted to general superintendent of Carter Mill, Lincolnton, N. C., a division of A. B. Carter, Inc., Gastonia, and will still maintain a portion of his duties on sales promotion.

H. Searcy Elliott Joins A. B. Carter, Inc.

H. Searcy Elliott, who has been connected with the Callaway Mills at their Unity Plant, LaGrange, Ga., for the past several years as overseer of twisting and finishing departments, is now representing the Carter Traveler Co., and the Mill Devices Co., Divisions of A. B. Carter, Inc., Gastonia, N. C., and is covering the territory formerly covered by W. A. Hunt, which includes Georgia, Alabama and a portion of Tennessee.

Ab. D. Martin Joins Chemical Processing Co.

Ab. D. Martin, formerly superintendent of one of the Gossett Mills at Anderson, S. C., has been appointed a salesman with the Chemical Processing Co., of Charlotte, N. C. Mr. Martin's territory will comprise part of South Carolina, Georgia, Alabama, and other Southern States.

The Chemical Processing Co. was organized in Charlotte about six months ago, and the increase in business during the period has warranted the addition to the staff. Henry Latham and Ralph Jones are proprietors.

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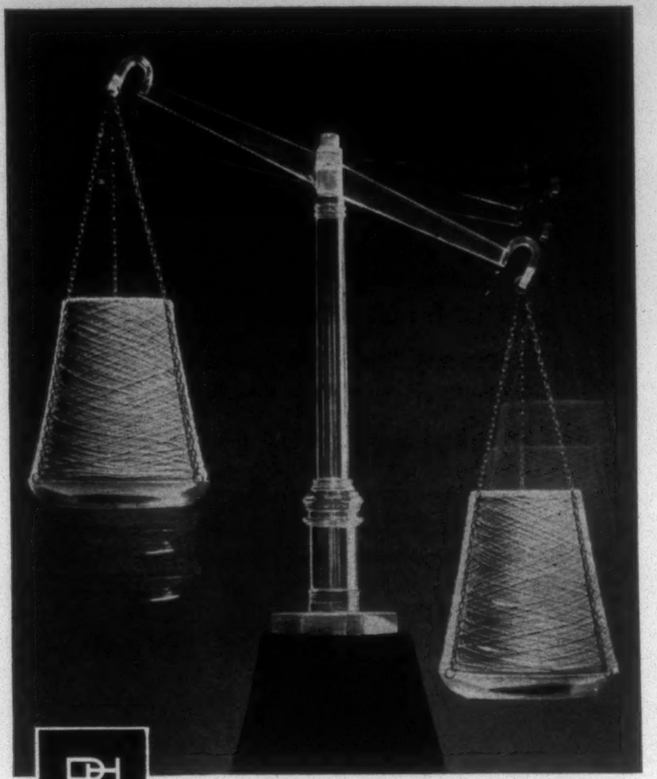

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W-30

tips the balance . . .

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Why? Both agents wet rapidly. But TRITON W-30 *wets through*—more water is absorbed. That's the difference. With TRITON W-30 every fiber of the yarn, even at the core of the package, is thoroughly penetrated.

Tip the balance in your favor. Use TRITON W-30 in dyeing, desizing, finishing, and other wetting applications.

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Emmons Increases Representation in the South

In order to give the friends and customers of the Emmons Loom Harness Co. a well-rounded organization in the South, Clifton E. Watson, manager of Southern sales, and located at Charlotte, announces the following list of Emmons' representatives located at strategic points to serve the Southern textile industry.

Henry E. Littlejohn, president of the Piedmont Reed & Sales Co., of Greenville, S. C., will act as South Carolina agent for Emmons. Mr. Littlejohn will handle all products manufactured by the company except reeds. These products include flat steel heddles, heddle frames, twine and mail-eye harness and Wardwell loop and doll pickers. Mr. Littlejohn is a practical designer and weaver. He has been in the heddle and heddle frame business for a number of years and his many friends in the industry will be glad to learn that he will be available for consultation on any harness problem. The Piedmont Reed & Sales Co. will continue to manufacture and sell reeds for its own account.

Left to Right: George Field, Henry Littlejohn, A. W. Harris, Clifton Watson.

Arthur W. Harris, of the Harris Mfg. Co., Atlanta, Ga., will serve as Emmons agent in Alabama, Georgia, Louisiana and Mississippi for all products except reeds. Mr. Harris has been one of the pioneers of the South in this line of business and has been identified with the textile industry for 29 years, and is well versed in the manufacture of all types of harness. The Emmons Co. feels that his many years of experience with the problems of weaving will be of great benefit to his friends in the territory. The Harris Mfg. Co. of Atlanta will continue to sell reeds on its own account.

Clifton Watson, manager of Southern sales, Box 2036, Charlotte, N. C., represents the Emmons Co. in North Carolina, Virginia, West Virginia and Tennessee. Mr. Watson has been active in this line of business for 18 years and is well known throughout the Southern textile industry.

William L. Braley, of the Southwest Supply Co., Box 236, Itasca, Tex., represents the Emmons Co. in Texas and Oklahoma.

The Emmons Loom Harness Co., with factories in Lawrence, Mass., and Charlotte, N. C., and with sales offices in New York, Atlanta, Greenville, and Itasca, Tex., is now exceptionally well equipped to offer a comprehensive service to mills throughout the country.

Hereafter, Emmons products, including standard sizes of flat heddles, will be stocked in Greenville, S. C., as well as at Charlotte, N. C., and Atlanta, Ga. This will enable the company to give rapid, efficient service to its clients no matter where they are located.

George A. Field is manager of the Charlotte division.

Testimonial Dinner To W. A. Traver, Vice-President of Franklin Process Co.

On Saturday evening, September 21st, the employees of Franklin Process Co., of Providence, R. I., gave a testimonial dinner for W. Allen Traver, vice-president and general plant manager, who is this year completing 25 years of continuous service with the company. Nearly 700 employees and members of their immediate families were present.

Mr. Traver, to fittingly recognize the many other employees who have helped to make his successful management possible, gave out approximately 130 service buttons to those who had been with the company ten years or more.

W. A. Traver

Mr. Traver was born in Worcester, Mass., February 15, 1886, was educated in the Worcester public schools and after graduation was employed by his uncle at the William Allen Boiler Works of Worcester. In the fall of 1915 he went with Franklin Process Co., of Providence (makers of dyeing machines and custom yarn dyers) as mechanical superintendent. In 1918 he became assistant manager and a director of the company; in 1920 general plant manager and in 1933 vice-president and general plant manager, which position he holds at the present time.

John M. Wood, mechanical superintendent of the company, presided as toastmaster. The speakers were E. S. Graves, president and general manager; L. W. Jones, treasurer; E. P. Pastram, director; A. N. Dana, secretary and assistant treasurer; Miss Florina Levesque (for the winding department); Earl E. Greene, Jr. (for the dyehouse); Thomas Anderson, Sr. (for the mechanical department), and Carlos Collins, paymaster and oldest employee in length of service now with the company.

Mr. Collins spoke for the accounting department and also presented a handsome silver service, suitably engraved for the occasion, to the guest of honor, Mr. Traver, on behalf of all the employees; and a beautiful bouquet to Mrs. Traver.

The members of the dinner committee were as follows: J. M. Wood, chairman; Eveleyn Mac Lachan, secretary; Austin F. Matthews, treasurer; Thomas Anderson, Sr., T. Ivan Brown, Ernest Boudreau, Antonio Castellone, Clinton W. Dawson, Earle E. Greene, Jr., John F. Heran, Wm. J. Laas, Mary N. Giddall.

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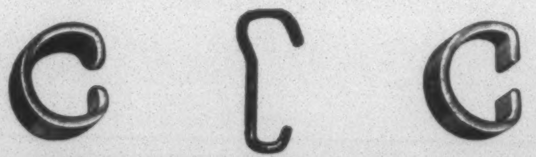

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New Nopco D L N
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TEXTILE BULLETIN

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Ellis Royal	Associate Editor

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Contributions on subjects pertaining to cotton, its manufacture and distribution, are requested. Contributed articles do not necessarily reflect the opinion of the publishers. Item pertaining to new mills, extensions, etc., are solicited.

Paints Bright Picture

In an address made at Charlotte before the Carded Yarn Group, Dr. Claudius T. Murchison, president of the Cotton-Textile Institute, painted bright picture of prospects for the industry, but pointed out that the picture was marred by the continued decline in exports.

The needs of the national defense program, he declared, will be a spur to consumption, which he estimated would reach the record domestic total of 8,000,000 bales. Exports were figured at 1,500,000 bales, making a total consumption of 9,500,000 bales of a predicted crop of 12,700,000.

"I was informed at Washington," he continued, "that President Roosevelt plans to have the full quota of 1,400,000 men under arms not later than February or March next year. Of course, this mobilization will require an enormous volume of textiles.

"But more important still to the industry, as I see it, is the fact that there is a greatly increased and further expanding consumer demand over the entire United States for consumer goods.

"The dark element in the picture," Murchison said, "is the fact of greatly reduced exports. The exports in August were only 30 per cent of the total for August last year, and we sold cotton only to England, Japan and Canada."

Plea for Practical Research Presented

David Clark, editor of the TEXTILE BULLETIN, and Marshall Dilling, general superintendent of the A. M. Smyre Mfg. Co., Ranlo, N. C., appeared before the Board of Directors of the Textile Foundation at a meeting in Washington, D. C., on September 19th, and presented a plea for assistance in conducting practical research in cotton mills.

The purpose of the Textile Foundation has been to aid the textile industry through research, but up to the present time most of the research has been along scientific and highly technical lines.

David Clark and Marshall Dilling urged the Directors to sponsor practical research within the mills.

Under the plan submitted by them, the Textile Foundation would employ a practical and experienced man who would plan and supervise tests made in mills and tabulate the results.

When a man, in a mill, expressed a willingness to make a test, the supervisor would come to the mill and lay out the method to be used. Later he would make another visit to check the progress and when the test was completed would tabulate the results.

When the same test had been made in a number of mills and definite results obtained, the information would be of value to the industry.

We believe that if such a supervisor is established, by the Textile Foundation, several hundred men in the mills would be willing to make tests upon problems from the lapper room to the cloth room and great benefit would result.

Mr. Clark told the Directors of the Textile Foundation that, in his opinion, the adoption of the proposed plan would show more results per dollar expended than in any research heretofore attempted.

The Textile Foundation is considering the proposed plan and will reach a decision at an early date.

Maximum Hours 40 on Oct. 24th

Mills should not overlook the fact that on and after October 24th, under the provisions of the Federal Wage and Hour Law, the maximum weekly hours that an employee may be worked without the payment of time and one-half for overtime will be reduced from 42 to 40.

Those who have not already made their plans to meet this change in the law's requirements should remember the date.

Japan Joins

It was with deep regret that we learned that Japan had signed a military pact with Germany and Italy.

We had, to some extent, excused Japan for its invasion of China upon the grounds that for twenty years China had had no real government and there appeared to be no end to their internal warfare, but we cannot excuse Japan for taking its stand beside the aggressor nations of Europe.

Japan depends upon the United States for a large part of its export trade and we did not think that they would risk that business, but their decision has been made and it is now up to the people of the United States to say whether or not they will give them support by buying Japanese goods.

It is fortunate for us and for the hosiery trade that the DuPont Co. has invented nylon and the Viscose Co. is soon to offer vinyon.

The production of neither is very large now but it is hoped that the output can be rapidly increased, so that there will be little necessity to buy Japanese silk.

The greatest blow, which can be struck at Japan, will be to buy very little from them.

Where Communists Vote

Speaking of Communist influence in this country, Brother Fred May, compiler of North Carolina questions and answers, digs up that there were 11 votes cast in last election for Browder. All of them were in Orange County, and perhaps it is just as well that nothing is said by way of reminder of what precinct or precincts furnished 'em.—*Greensboro Daily News.*

Note.—The University of North Carolina is located at Chapel Hill, in Orange County.

Check-Off Decision

Judge Henderson, of the South Carolina U. S. Circuit Court of Appeals, has held that, when employees sign assignment slips covering union dues, the mill must deduct such dues from their pay envelopes and deliver same to union treasurers.

We admit that any man has a right to assign his pay to any person to whom he owes an obligation, but we do not concede that any company is required to do the work necessary to make regular deductions and to deliver such deductions to assignees. Corporations may be evil things but they still have some liberties.

We deny that mill treasurers can be made the involuntary collection agents of union racketeers.

One thing is very definite and that is that the cotton mill operatives of the South will not pay union dues regularly. The check-off is the one hope of those who obtain their living from money collected from union members.

Disowns His Son

We note the following newspaper dispatch:

> Berkley, Calif., Sept. 26.—A college professor, Samuel C. May, disowned his son today because of the latter's communistic leanings.
>
> Last night at a meeting of the Board of Education, the son, Kenneth May, teaching assistant in mathematics, avowed he was an official of the campus branch of the Young Communist League and of the Alameda County Communist Party.

If some of the radical group of professors at the University of North Carolina would be equally frank about their affiliation with communism, they would not be disowned. Judging by instances in the past, it is more likely that the admission would result in their salaries being increased.

What Is The Spinning Value?

The question of the relative spinning value of American and foreign cotton is one which is of vital importance to the American cotton industry. It should be answered as fully and as completely as possible with a minimum of delay.

It is quite true that the spinning value of cotton produced on the same land from year to year is not the same, even if the same strain of seed be used. The tensile strength is controlled by a great many factors, and when scientists get down to the fine points they are certain to encounter many difficulties.

But speaking in a more abstract sense, it seems more or less obvious that certain cottons produced in certain countries, year in and year out, have a superior spinning value to other cottons. It is of course well known that Indian cotton does not have the spinning value of Sao Paulo or American. It is also known that certain spinners use Indian cotton for certain reasons, and that the relative values are not a consideration, since Indian cotton produces the certain kinds of yarn that are desired.

But if American cotton lacks tensile strength on an average, if it can be improved, as it seems certain that it can, both as to grade, staple and fiber strength, then it would be greatly to the advantage of the American farmer to learn what was needed and how to accomplish it.—*The Cotton Digest.*

Mill News

TUCAPAU, S. C.—In addition to the extensive painting and repairing program of the Startex Mills here, modern winding and warping machines have been installed in one of the plants, together with improvements in the slasher room.

OXFORD, N. C.—A modernization program has been started at the Oxford Cotton Mills which will include the construction of an addition between the picker room and the opening room measuring 60 by 80 feet. New carding machinery and other equipment will be installed.

TOCCOA, GA.—A new opener room and warehouse is being constructed at the Hartwell Mills No. 2 here, with brick walls, concrete and wooden floors, wood framing, 20-year tar and gravel roofing and steel sash. C. M. Guest & Sons, of Anderson, S. C., were awarded the contract for the extension by J. E. Sirrine & Co., engineers.

DURHAM, N. C.—Orders for equipment for the extension to the boiler plant at the Erwin Cotton Mills here have been issued as follows: Coal handling equipment and coal silo to the Fairfield Engineering Co., Marion, Ohio; automatic coal scales to Richardson Scale Co., Clifton, N. J.; ash handling equipment to the United Conveyor Corp., Chicago, Ill.; plant meters to the Bailey Meter Co., of Cleveland, Ohio.

GASTONIA, N. C.—At the Ridge Mill, unit of Textiles, Inc., an extension is planned to be added to the lower section of the mill, to accommodate additional machinery. Machinery to be installed includes twelve cards, four combers, one slubber, two intermediates, and nine roving frames.

SANFORD, N. C.—The Sanford Cotton Mills began operations recently after being closed down for several months due to lack of orders.

Most of the looms are now in operation and it is expected that the mills will be running to its full capacity soon, according to E. M. Underwood, secretary and treasurer. About 200 persons are now employed.

WAXHAW, N. C.—The Rodman-Heath Cotton Mills have been leased for a five-year period to W. R. Armstrong, of Gastonia, N. C., according to records filed at the court house in Monroe recently. Mr. Armstrong has an option to purchase the mills at the end of the lease period.

Although no information has been received as to the Gastonia man's plans, it is understood that the mill will be put into full operation as soon as certain changes and repairs are made. The mill manufactures cotton yarn and it was reported that the output will be used in filling government orders for military materials.

Graniteville, S. C.—Graniteville Co., manufacturers of cotton fabrics, reports for the quarter ended June 30, 1940, net profit of $10,133 as compared with net profit of $118,745 in the three months ended June 30, 1939.

Sales and charges for the quarter amounted to $2,085,669 as against $2,231,328 in the corresponding 1939 quarter.

ROCK HILL, S. C.—Four hundred Draper looms and auxiliary equipment have been purchased by the officials of the Aragon Cotton Mill and will be installed in the mills to replace certain obsolete equipment in the mills. The company will also expand its facilities and for this purpose the company now has an addition under construction which will measure 57 feet by 130 feet. The addition will be two stories.

LAFAYETTE, GA.—The Exposition Cotton Mill No. 2, at Linwood, mill village adjoining Lafayette, is to resume operations soon, after having been closed for the past six years. A. E. Massey, of Anniston, Ala., has been named superintendent of the plant and has arrived to take charge of the work.

The mill, formerly owned by the Consolidated Textile Co., closed during the 1934 general strike and never reopened. It was bought at a bankrupt sale by the Exposition Cotton Mills of Atlanta, who repaired the homes in the village about two years ago. The mill will start with two shifts, embracing about 200 people, and more will be added as business demands.

CHEROKEE FALLS, S. C.—The Henrietta Mills, at Cherokee Falls, idle since August 15th because of a scarcity of water, resumed operations Sept. 16th. Three shifts will be used, at least temporarily, it was reported. The mill employs more than 450 men and women.

The plant was forced to shut down when high waters broke a 200-foot hole in the main dam on Broad River. A channel of the river supplying the mill with water for electrical power filled up with sand, shutting off the water supply. Coffer dams built above the break were just about completed two weeks ago when a few days of heavy rain washed them all away.

The temporary dams have been rebuilt and plant officials believe the mill can continue operating while the break in the permanent structure is completed. The Lee Construction Co., of Charlotte, N. C., has been in charge of the work.

MCCOMB, MISS.—A cancellation of the deed of trust on the Van Dyke Knitting Mills property here has been received and a quit claim deed expected when the machinery of the plant has been moved out. This means, according to Mayor Kramer, that the building now is free of any liens and is clear for any prospective occupants who might locate an industry in McComb to replace the Van Dyke Mills, which are closing.

MASTER MECHANICS' SECTION

Leather Belting Information

Run Grain Side Of Belt To the Pulley

The hair or "grain side" of a single belt should be run next to the pulley because it has a greater coefficient of friction than the flesh side and will assure better grip on the pulleys.

Directions To Run Belts

Single belts should run with the lap on the grain or hair side pointing in the direction which the belt runs. Double belts should run with the laps pointing away from the direction the belt runs. This keeps the laps from opening due to windage or rubbing against something.

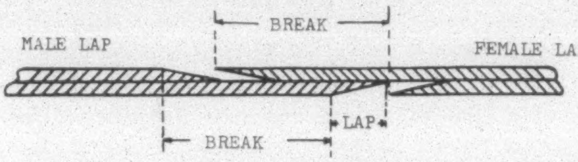
Making Belts Endless

It is best for belts over 6″ wide, running at high speeds and for belts operating on Rockwood Drives to be cemented endless. "Endless" belts have a smooth even lap which makes a continuous grip on the pulleys, runs truer and lasts longer than belts on which leather or metal fasteners are used. Where the pulleys and shafting permit putting on endless belts, those up to 8″ may be made endless before putting on; where this is not possible and on drives over 8″ wide, the belts should be made endless after being placed around the pulleys. Some large Rockwood-Drive belts have factory made endless laps on large belts up to 24″ three ply.

Preparing Laps

Single Belts: To prepare a lap on a single belt, first square the ends holding the square on the belt until the cut is at least half way through. Then skive the opposite surfaces of the belt so that they will fit evenly together being sure that they are tapered just enough to make the joint the same thickness as the rest of the belt. The lap on belts under 6″ wide should be 4″ to 8″ long, and on single belts over 6″ wide, 4½″ to 10″ long. Longer laps are recommended as they make a more flexible joint. The length of lap should, of course, be added to the net belt length when cutting from the roll.

Double Belts: The preparation of laps on narrow double belts may be the same as for a single belt but a more satisfactory method is illustrated below:



The plies are separated on the female end of the belt and skived back in the manner shown. The male end is then prepared by skiving the outer surfaces so that the belt matches evenly. The distance between the grain points of the belt is known as the "Break." The length of the break should be as follows:

Belt Width	Break	Belt Width	Break
8″ and under	8″	16″ to 18″	18″
8″ to 10″	10″	18″ to 20″	20″
10″ to12″	12″	20″ to 22″	22″
12″ to 14″	14″	22″ to 24″	24″
14″ to 16″	16″	over 24″	24″

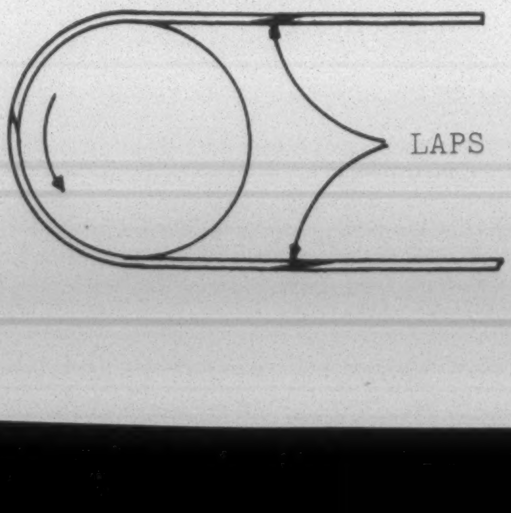
In addition to this break, the length of the lap in each ply of a double belt should be as follows:

Belt Width	Length of Lap (in single ply of double belt)
Up to 6″	3 ″
6″ to 10″	3½″
Over 10″	4 ″

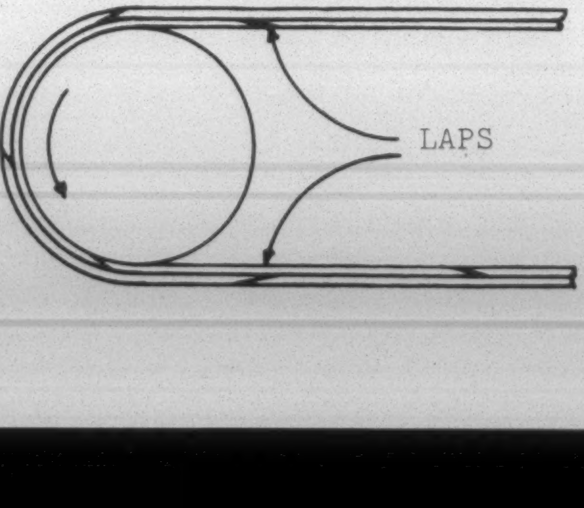
Cementing Endless On Pulleys

When belts are cemented endless on the pulleys, place them around the pulleys and attach clamps to the ends of

SINGLE BELT



DOUBLE BELT



the belts as far out as possible so that there will be ample take-up on the rods. Place a mark on the belt behind the clamps so that any slippage of the clamps will be readily noticed and corrected. If necessary, shorten the male end of the belt, as this can be done more easily than shortening the female end.

Applying Cement

First, roughen the laps of the belt to permit the cement to hold well and then apply a sizing coat of cement. Allow it to dry from fifteen minutes to a half hour before applying a second coat. After the second coat is applied, match the ends of the belt carefully and hammer in some tacks to keep the ends from slipping. Pressing blocks should then be applied to press the cemented joint very firmly together. On small belts several C clamps will prove adequate but on larger belts we recommend getting regular press blocks. If the splice is large, *cement only* about *six inches* of the length of the lap *at a time* and allow this to dry at least a half hour before moving to the next section. Allow the cement to dry from four to six hours and then remove the clamps, take out the tacks and scrape off the excess cement.

Metal Fasteners

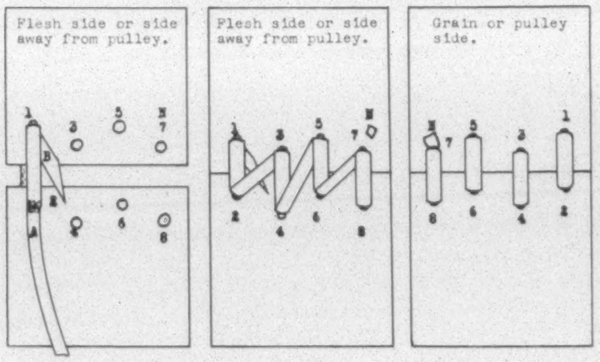
Hooks of the Clipper, Detroit and Safety type have been found satisfactory for many narrow belts. These should be pressed in firmly so that the hooks are flush with the outside of the belt.

Metal fasteners are not generally recommended for belts run on paper pulleys, as they tend to gouge the pulley surface.

Fastening Belt Ends With Belt Lacing

Be sure that the ends of the belt are cut exactly at right angles to the sides. Use a square and hold it on the belt until it is cut at least half way through.

Punch two rows of holes in each end of the belt as shown in sketch. The holes in both ends of the belt should be exactly opposite. Use a punch in making lace holes in leather and an awl in fabric belts. Holes should be slightly smaller than width of lace used.


Flesh side or side away from pulley.
1
3
5
N
7
B
2
A
4
6
8
Flesh side or side away from pulley.
1
3
5
7
N
2
4
6
8
Grain or pulley side.
N
7
5
3
1
8
6
4
2

You can put stiff tips on the belt lace by toasting the ends in a match flame. Turn the lace over as you toast it to prevent warping crooked.

Be sure that the lacing is put in tight at a uniform tension, so that the belt will not pull crooked. Lace with flesh side up. Put lace down through 1, up through 2, down through 1, up through 2, down through 3, up through 4, down through 3, up through 4, down through 5, up through 6, down through 5, up through 6, down through 7, up through 8, down through 7, up through 8, down through 7. Punch hole with awl and faster at N.

Lacing Table for Single and Double Belts

Width of Belt	Width of Lace	No. of Holes	Distance of Holes From End First Row	 Second Row
1 " to 1¾"	¼"	2 or 3	⅜"	
2 " to 2½"	5/16"	3	⅜"	⅞"
2¾" to 3½"	5/16"	4	½"	1 "
3½" to 5 "	⅜"	5	⅝"	1⅛"
6"	7/16"	6	¾"	1¼"
7"	7/16"	7	¾"	1¼"
8"	½"	8	⅞"	1⅜"
10"	½"	10	1"	1¾"
12"	½"	12	1"	1¾"
14" and over	⅝"	13	1"	1¾"

Pulleys

Motor Pulleys

Paper pulleys are recommended for all motor drives, as they provide a strong gripping surface and consequently reduce slip and transmit more power. Also recommended is the use of a paper driven pulley when it is smaller or nearly the same size as the motor pulley.

Large Pulleys

As a general rule, wooden pulleys are best for high speeds and cast iron or Rockwood split fibre pulleys for drives where exceptional smooth running and rigidity are desired. Pressed steel pulleys have a slightly lower first cost.

The demountable rim type pulley is very popular where different shaft speeds are required. Available in diameter from 10" to 24".

Use Split Fibre Laggings to increase the size of inadequate pulleys and fly wheels, or to make it possible to change gear, chain or grooved wheels for flat belt use. These Split Fibre Laggings clamp on the present surfaces, increasing their diameter and face widths for a wider belt where necessary.

Increased belt speed gives more capacity and for such drives as compressors the increased weight often smooths out pulsations assuring smoother operation and longer belt lift.

Idler Pulleys

When idler drives must be used, the idler pulley should be placed on the slack side of the belt at a distance not less than the width of the belt from the smaller pulley and should have a diameter at least equal to that of the smaller pulley.

Flanged and Step-Cone Pulleys

For flanged or step-cone pulleys, belts should be ordered ⅜" to ½" narrower than the faces of the pulleys so that they won't rub or ride up on the flanges or steps. Belts used on these pulleys should be heavier and narrower than on other pulleys and they should be kept tight to prevent the belt from running up on the next pulley step or flange edge of the pulley.

Pulley Alignment

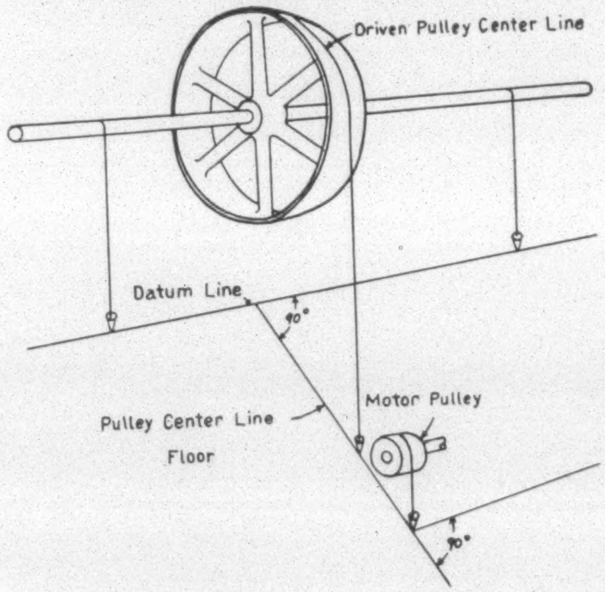
It is important that the pulleys be in line in order to transmit power efficiently. If they are not, the belt will tend to run off much more readily when under peak loads, often causing injury to the belt and a loss in output.

Method Of Aligning Two Pulleys

The first step to be taken when aligning two machines is to see if they are level. It is possible for a machine to be out of line in more than one plane. If, by placing a level or plumb on the machine, it is found to be out a certain amount, the motor must then be mounted so that it will also be out a like amount.

Belt drive is the most common form of mechanical transmission, but the principles involved and the methods used apply, in general, equally well for chain drive.

The illustration shows a simple and easy method of aligning a motor pulley with the driven pulley. First, the crown or center line of the pulleys must be on the same center line, and, second, the motor shaft must be parallel to the driven shaft.



By using a plumb bob and drawing a datum line on the floor, a base of operation is established. Next, drop a plumb line from the center of the driven pulley to the floor. With a square, draw a line perpendicular to the datum line. Next, drop a plumb line from the center of the motor pulley and move the motor up or back until the plumb bob rests on the center line of the driven pulley. From the pulley center line, perpendiculars may be drawn through the centers of the holes in the motor feet. A level should be used to see that the line-shafting is level. If it is not, then the motor feet must be shimmed up so that the motor shaft and the line shaft will be "out of level" the same amount.

With belt drive, a sliding base is nearly always used to allow for belt adjustment. Another method, therefore, is to use the following procedure when aligning two pulleys.

1. Place the motor on the base so that there will be an equal amount of adjustment in either direction, and firmly fasten the motor to the base by means of the four holding-down bolts.

2. Mount the motor pulley on the motor shaft.

3. Locate the base and motor in approximately the final position, as determined by the length of belt.

4. Stretch a string from the face of the driven pulley toward the face of the motor pulley.

5. Parallel the face of the motor pulley with this string.

6. Using a scratch pin, mark the end positions of the sliding base.

7. Extend these lines.

8. Move the base and motor away from the string an amount equal to one-half the difference in face width of the two pulleys. Use the two extended lines as a guide to keep the base in its proper position.

9. The belt should now be placed on the pulleys to see if it operates satisfactorily. If it does not operate properly, the base may be shifted slightly until proper operation is obtained.

10. Finally, firmly fasten the base to the floor, ceiling, or side walls by means of lag screws or bolts.

Belt Maintenance

Keep Belts Tight

Belts should always have enough tension to carry the peak load without undue slip but at the same time should not be so tight as to stretch the belt excessively or to overload the bearings. Long horizontal drives may have a very marked sag in the slack strand and still have adequate tension. Short center drives should have both strands taught. The greater weight and elasticity of the long belt makes it an easier drive. When the belt is of high quality and of sufficient weight and width to properly carry the load, there should be little trouble from either stretch or slip. If the belt should stretch, and even good leather belts may stretch enough to lower the tension when new, it should be shortened, or the tension adjusted if it is on a Rockwood Drive or a slide-rail base to avoid loss of power and the falling off of output through slipping of the belt. With flanged or step-cone pulleys we have an additional danger, for if the belt becomes loose it is apt to run up on the flange or step pulley and may be seriously stretched and curled on one side. Belts should be kept snug on these drives.

Keep Leather Belting Lubricated

New belts of good quality have had the right amount of lubricating material worked into them during the processes of manufacture; but in service this is slowly lost, and if not replaced as needed the belt will become dry, hard and shiny, reducing belt life and capacity. These results may be avoided, and the service life of the belt much extended by occasional judicious applications of a good belt preserver. Only small quantities should be put on at a time and this should be done at regular intervals. It is a good policy to warm the preserver and apply it with a brush, rubbing it in well while the belt is standing still or running without load. Allow the dressing to soak in before applying the load.

Keep Belts Clean

Sometimes a coating of dirt, grease, lint, etc., accumulates on the running surface of the belt. Clean the dirt from belt. If the accumulation is of long standing and cannot be removed with burlap dipped in warm water, use gasoline or preferably carbon tetrachloride which is non-inflammable. When cleaned and dried apply belt preserver.

In dusty places apply liquid preserver to the back of the belt. In acid fumes apply liquid preserver regularly once a month to keep the fumes from attacking the belt.

Check for Minor Belt Repairs and Pulley Alignment

Frequent check of belts to note and care for any need of slight repairs may add to their service-life. Check for misalignment of pulleys and shafting and make adjustments as needed so the belt may continue to run true and give maximum service. Don't let the belts rub against beams, shifting forks, pipes or anything else. Difficult drives should receive more frequent attention to insure trouble-free service.

Suggestions for Improving Belt Drives

1. Belt Slips and Squeals

This is a warning that either the belt is not tight enough or does not have adequate capacity. Tightening the belt and applying belt dressing will frequently solve this problem. The belt should be replaced by one of greater capacity if the load is too great.

2. Some Ways of Increasing Capacity

Increase tension; use larger pulleys to increase belt speed or increase shaft speeds if possible; increase arc of contact; use wider or thicker belt; use an automatic belt tightener if feasible; use a better gripping belt. Regular applications of belt dressing will prolong the life of the belt and give it a better pulling surface. On jerky drives or those with short high peak loads, a fly wheel or a Bethlehem Slip Ring Starter will smooth out the loads to make the drive easier.

3. Belt Runs Crooked

There may be several reasons for this.

a. Tight belts may easily be injured by forcing them on the pulleys in such a manner that one side of the belt is stretched more than the other. Great care should be taken to prevent injury and, except on idler drives, all belts over 8" wide used on pulleys with fixed centers should be put on with clamps.

b. If belts are allowed to get slack on either flanged or step-cone pulleys, they are likely to run up on the flange or pulley and stretch one edge excessively, making the belt crooked. Keep belts tight.

c. If either pulleys or shafting are much out of line, the belt may become crooked, especially if allowed to run in this manner for long.

Check to see if there is a curve in the belt or if the pulleys are out of line; then reverse the direction to see if the belt runs to the same side of the pulley. If it runs to the opposite side, the belt is probably crooked, and neither the shafting nor pulleys is at fault.

4. Excessive Belt Stretch

When a belt stretches excessively it may not have adequate capacity for the drive. After the belt has been put on snugly, a stretch up to 3% or 4% of the total belt length is normal, 6% is excessive and if the belt stretches 8% or more, it is quite likely to continue to stretch until it breaks or is removed unless the load can be reduced or the capacity of the drive increased.

5. Belts Running Off Pulleys

If the belt refuses to stay on the pulleys at all, check alignment of the pulleys and then for crooked belts as above. If the belt comes off at peak loads, apply the same corrections as when the belt slips or squeals.

6. Belt Weaves Back and Forth Across the Pulley

Pulleys wobbling on the shafting is the principal cause of weave. A slight wobble in the pulley may cause quite a weaving of the belt if they get "in step." On some drives the belt may weave or flag when run idle or under light load but will pull straight under load. An extremely crooked belt will also weave back and forth.

7. Belts Whipping or Flapping Excessively

Whipping or flapping occurs chiefly on long fixed center drives. It usually occurs in the slack strand and may be caused by an unsteady or intermittent load in the machine or pulsating application of power (such as in gasoline engines) a loose foundation, a lopsided pulley, a sprung shaft or an unevenness in the belt. Whipping or flapping is likely to occur when the belt is heavily loaded or even underloaded. The source of unsteadiness may sometimes be discovered by comparing the period of the flap with the cycle of the machine or by bracing or steadying various parts. Sometimes changing the speed will start or stop a flap. Flapping may be reduced by decreasing or increasing belt tension. Try decreasing it first. In persistent cases it may be necessary to place a fixed idler so that it steadies the belt without materially increasing the tension.

8. Belts Running To One Side of the Pulley

Occasionally a belt that ordinarily runs true will run to one side of the driven pulley. This may be caused by one of two things: Either the belt has become slack or the load has been increased by giving more work to the machines being driven or the journal boxes have become dry thus causing friction that increases the load.

If the belt is too slack or the load too great, the belt will tend to run off. To remedy this either take up the belt, thoroughly oil the journals, take off the extra load—or a combination of all.

The belt will run to the low side of the pulley if the driven shaft gets out of parallel with the driving shaft. A pulley that is keyed on will sometimes slip sidewise, or a whole shaft slip endwise if the collar becomes loose.

If the two shafts are parallel and there is a slightly higher place on one pulley than on the other the belt will run to the high place. If the shafts are not parallel and the pulley faces are straight the belt will run to the low side or that closest to the driving shaft. To correct this, make the shafts parallel with each other. One or both shafts may be out of level as well as show unequal distance between the ends.

Other reasons for belts running to one side, beside that of poor alignment, are unskilled lacing allowing one edge to stretch more than the other; the belt may be in poor condition, and create a tendency to run irregularly.

This information is from a recent publication of J. E. Rhoads & Sons, which contains more complete data and suggestions than are published here.

Erecting, Overhauling and Fixing Looms

(*Continued from Page* 10)

The lug, or stop on the spring shaft worm wheel, should never be broken off. The purpose of this stop piece is to contact the worm shaft stop and prevent the cloth roll spring being wound too tightly when the cloth roll is run up to top position. Lint and waste accumulating in the spring shaft gears and the cloth roll racks should be thoroughly cleaned out whenever the warp is changed.

Setting the Let-Off Motion

First, make sure that the yarn beam is in place, in running position, in the beam locks. Adjust the worm wheel shaft bracket to put the let-off pinion gear in proper mesh with the gear on the beam head. Set the whip roll shaft bearing in the desired position and tighten them securely; this will position the whip roll vibrator rod. Set the controlling lever stand in position so that the vibrator rod will work freely, then tighten the stand securely. Line the controlling lever with the pallet lever so that the controlling lever link will be securely held in place, but without any binding. Place and tighten the beam lever bracket in position to equally divide the beam lever shaft in the slot in the let-off pinion shaft.

Fit and tighten the let-off guard, the let-off outside bearing support, and the let-off outside bearing, so that the let-off pinion shaft, and all other movable parts of the let-off will work free of any binding. With an empty yarn beam in the loom, place the end of the beam lever against the beam drum, and the controlling lever link at the bottom of the slot in the pallet lever, tighten the beam lever and the controlling lever link to the beam lever shaft. Turn the lay to extreme front center position, tighten securely the swords, rocker shaft bearings, the parallels, and the driving rod arm. With the lay in front center position, adjust the connecting rod end, tighten it securely to the connecting rod with the pallet lever held back against the stop on the controlling lever stand. Position and tighten the pinion shaft handle hub so that the pin in the let-off pinion shaft arm will contact the pinion shaft handle.

Carded Yarn Group Elects R. C. Forrest

Charlotte, N. C.—Members of the Carded Yarn Group, in their annual meeting here Sept. 17th, heard Dr. Claudius T. Murchison, of New York, president of the Cotton-Textile Institute, express the opinion that the cotton textile business is definitely on the uptrend.

Dr. Murchison was principal speaker. Lionel Adams, scheduled to talk, was unable to come. The group elected R. C. Forrest, of the California Cotton Mills Co., of Uniontown, Ala., as chairman to succeed E. N. Brower, Hope Mills, N. C., and re-elected Owen Fitzsimons, of Charlotte, as secretary.

Business discussed included the work of the committee from this group and the distributors group which was recently appointed, and ways of improving sales policies through its program. The body also expressed its wish to co-operate with leaders of the National Defense work in any way possible.

Dr. Murchison pointed out that inventories of textile goods are low and that increases are predicted in purchasing power and in retail sales and described these as two factors which will make business better for the textile men. He said that passing of the conscription bill will mean a great increase in Government buying of textiles. He also spoke of the export subsidy as a reason for optimism.

The textile industry must work to increase cotton consumption, he declared. He said the Institute is meeting splendid response in its program with approximately 10,000,000 spindles already signed up for participation in the program. The campaign is not yet half over and thus there should be from 13,000,000 to 14,000,000 spindles when the total number have been signed up, a number which will make possible a remarkable promotion program, he declared.

He quoted figures showing increase in consumption in August and said that this is just the beginning, for the public is becoming more and more interested in using cotton because they like it as well as because it is so important to the nation's economic welfare.

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Union Bleachery Holds Annual Event

Greenville, S. C.—Some 1,200 employees and their families attended the annual outing of Union Bleachery residents recently at Paris Mountain State Park.

A barbecue dinner was served during the noon recess. A program highlighted by games and contests featured the entertainment. Jesse D. Brown and Tom Turner were general chairmen of the event.

Spun Rayon Blankets Strong Retail Line

The growth of demand from stores for spun rayon blankets is a feature of the present season in the domestics market. Orders for this merchandise have risen so decisively as to necessitate considerable increase in production by manufacturers. According to Donald B. Tansill, vice-president of Pepperell Mfg. Co., blankets of spun rayon content can now be regarded as established in the domestics field. The Pepperell Co. expects this new product to assume a very vital part of their blanket production in 1941.

The Pepperell Co. now holds a leading place among manufacturers of rayon blankets. Their current line includes three Crown Tested Spun Rayon Blankets which retail at from $3.98 to $5. An interesting feature of the new line is that it marks the first application of the Crown Quality Control Plan of the American Viscose Corp., to blankets.

The Pepperell Co. introduced its range of Crown Tested Spun Rayon Blankets early this summer with two numbers—Lady Pepperell de Luxe, and Abbotsford. These blankets weigh 3½ pounds and 3¼ pounds, respectively. They contain 50% Crown spun rayon and 25% wool and 25% cotton, and they retail at $5 each.

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300% Longer Flexing Life Claimed for New Cotton Tire Cord

Memphis, Tenn.—A new cotton tire cord with "300 per cent longer flexing life than the best conventional cord of the same gauge size" is announced by the National Cotton Council as cotton's answer to the challenge of rayon in the heavy-duty truck and bus tire field.

Laboratory findings, plus road tests conducted in collaboration with the Firestone Tire & Rubber Co., are held to show that the new cord also has a 35 per cent higher breaking strength than the best conventional cord, with low sensitivity to heat and moisture.

The Cotton Research Foundation, research agency of the council, states that through patent rights the new cord-making processes will be made available to the whole tire industry. Revenues gained from royalties will be used to defray further research expense.

The new cord is the result of these years of study by Dr. R. F. Nickerson at the Mellon Institute in Pittsburgh under the auspices of the National Cotton Council and its research affiliate.

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Cotton Goods Markets

New York.—Buying in cotton gray goods continues to be good, with all types of goods participating in the movement. Print cloths, sheetings, broadcloths, duck, osnaburgs, etc., have all been active and indications are that they will continue so for some time.

Buyers and sellers both seem to be pleased with the tempo of trading, and are expressing themselves as very much in favor of discouraging any such speculative buying as characterized the market just a year ago this fall.

Strangely enough, merchants are more fearful of a sharp uprush in buying than they are of a slowing down in the rate of business. With looms busily engaged on military orders and commercial business increasing steadily, the trade at large is of the opinion that the materials for a "buying explosion" are at hand and that little would be required to touch them off.

Most print cloth have sold the bulk of their production for the next 60 days and are not too anxious to book orders for distant delivery. It is generally agreed that several days of continued steady buying will tie up production for the remainder of the year. Some buyers are willing to cover their requirements in to the early months of next year, but most are content to purchase only their needs for the last quarter. With retail distribution of cotton goods increasing and finished goods moving out of good volume, most merchants are of the opinion that the market faces a period of sustained buying.

Convinced that ducks will remain in a strong position for months to come, commercial buyers are seeking to cover on Army ducks for deliveries running through the first quarter. Some mills were reluctant to negotiate these contracts, not knowing what the Government may require in the matter of supplies during that period. There has also been a good business on flat ducks which have been lagging behind the plied numbers. Plied ducks are almost impossible to obtain, so much so that some buyers are giving up the attempt to obtain the weights and weaves that comprise the bulk of the purchases for military purposes.

The Army embarked upon further long-term buying when it made known that bids will be opened on October 2nd to obtain 16 million yards of the standard Army khaki twill. Shipments against this order will be spread over 250 days.

J. P. STEVENS & CO., Inc.
Selling Agents
40-46 Leonard St., New York

Cotton Yarn Markets

Philadelphia.—Cotton yarn quotations are now at their highest level in six months, with delivery requisitions keeping pace with the placing of new orders, but with a considerable volume of yarn still unbought that will be needed during the fourth quarter of the year, and later. Thus far, despite the improvement, yarn buying has remained conservative and there has seemed to be no incentive toward speculation. The larger sale yarn sources are on the alert to check any such tendency, should it appear later on, when Government priorities may often conflict with deliveries contended for by manufacturers for the accommodation of their own customers.

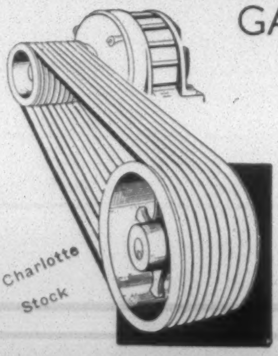
Demand for ply combed yarns has broadened materially and now spinners assert they will be unable to meet delivery demands being made upon them for the balance of the year in numerous cases. With Government goods taking so much yarn of this type, several large combed yarn producers expect the delivery situation to become even tighter before long.

One reason is the new invitation for bids on khaki cotton uniform cloth for the Army to be received at the local depot October 2nd. The amounted wanted is 16,000,000 square yards and one combed spinner declared this will take 8,000,000 pounds of ply combed alone. While integrated mills may book much of this business, combed spinners point out that even they have been in the open market for ply combed recently.

While regular accounts are being taken care of, spinners do not care to obligate themselves beyond 90 days, but in cases where customers seek to increase their coverage into January, or sometimes beyond, a certain proportionate increase in the orders, as booked, is being allowed, according to local reports. A month ago, some mill agents here went on record as advising customers that this condition would develop.

A year ago the burden on their twisters caused delivery difficulties among spinners and plans were discussed then for making this department more flexible, but delivery demand remained too active in spring and summer to give opportunity for mill adjustments of this sort.

In another section of the ply combed market is the situation of mercerizers making the delivery picture even darker for early deliveries.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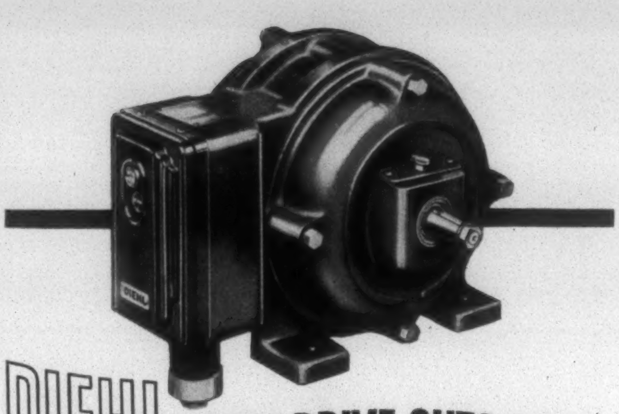
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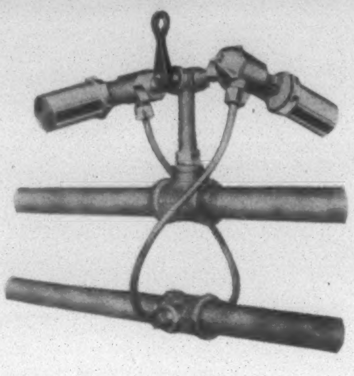

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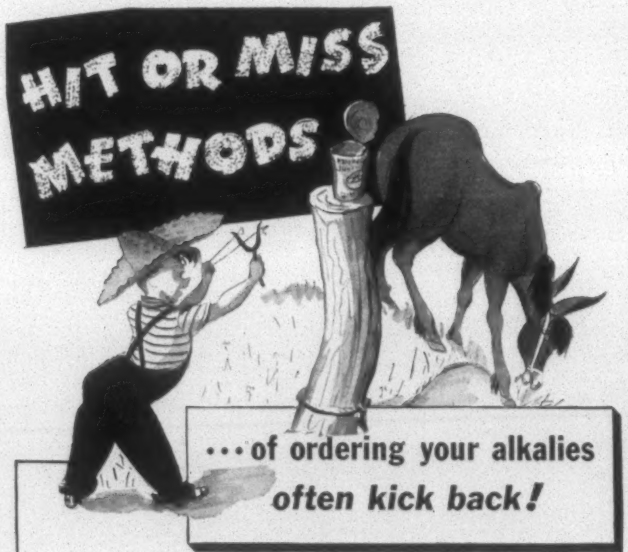
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SOLVAY ALKALIES

Textile Mill Production Formulae

(*Continued from Page 13*)

of the machines throughout the mill, students with no knowledge of cotton textile calculations will do well to memorize the formulae below.

The front or delivery rolls of the machines throughout the mills deliver a certain number of inches of stock per minute. The amount delivered is dependent on (A) the speed of the roll (revolutions per minute). (B) circumference of roll (3.1416×diameter). (C) minutes in 1 hour (60). (D) hours per day.

The total inches delivered per day is

$$A \times B \times C \times D$$

The yards delivered is

$$\frac{A \times B \times C \times D}{36}$$

The hanks delivered is

$$\frac{A \times B \times C \times D}{36 \times 840}$$

The amount in pounds delivered is dependent on the weight per yard, grains, ounces, etc., or the hanks per pound (count or number).

(E) $$\frac{\text{The total yards delivered} \times \text{grains per yard}}{7000}$$

shows the pounds delivered.

(F) $$\frac{\text{The total yards delivered} \times \text{ounce per pound}}{16}$$

shows the pounds delivered.

(G) $$\frac{\text{The hanks delivered per day}}{\text{Count or number}}$$

shows pounds delivered.

Formula E is used to figure the production of machines where the weight per yard is taken in grains, such as card sliver, comber and drawing sliver.

Formula F is used when figuring the production of pickers, where the weight per yard is taken in ounces.

Formula G is used to change the hanks per day to pounds where the production is reckoned in hanks first and then pounds, the hanks being registered by a counter driven by the delivery roll. Usually found on roving frames, spinning frames and ply yarn frames (twisters).

When figuring the production of any machine that twists the product, allowance should be made for contraction in length due to twisting, which is sometimes as much as 5 per cent. To shorten the output is the same as reducing the speed of the roll an equal percentage and the pounds produced also.

Allowance should be made for doffing, cleaning, oiling and repairs or any other unavoidable stoppage for the exact time lost, to find the percentage of efficiency of the time the machine runs.

Where machines have to be stopped for doffing the doffs per day should be determined first by adding the minutes required to doff to the minutes required to run the doff, and dividing the total minutes per day by this amount.

The hanks and pounds can then be ascertained with a greater degree of accuracy.

Weights and Numbers

437½ grains	1 ounce
16 ounces	1 pound
7000 grains	1 pound

840 yards of roving and yarn is 1 hank, and is the number of yards contained in a pound of 1 hank roving and number 1 yarn.

The hanks contained in a pound of roving and yarn is the count or number. For example, if a pound of roving contains 3½ hanks, 3½×840 yards, 2940 yards, it is 3.50 hank roving. Number 3.50 yarn contains the same hanks and yards per pound, the only difference being the way the count is expressed.

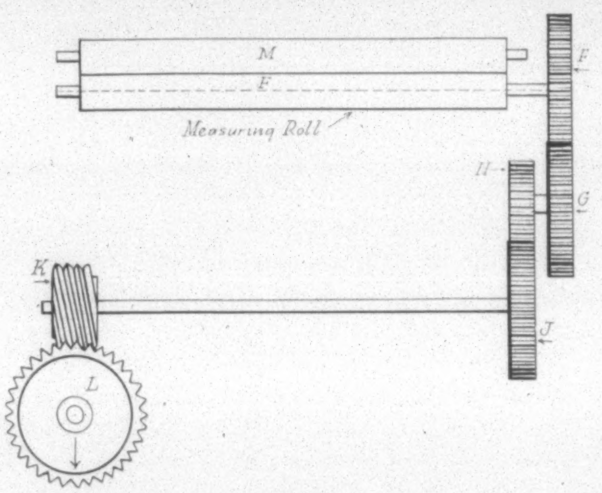


Fig. 3-A

1.00 hank roving and number 1.00 yarn weighs 8 1/3 grains per yard. 7000÷840=8 1/3.

For convenience in sizing and checking up on the weights and counts, the roving is weighed in lengths of 12 yards, which is 1/70 of a hank.

$$\frac{\text{The length in yards} \times 8\ 1/3}{\text{Weight in grains}} = \text{count}$$

$$\frac{\text{The length in yards} \times 8\ 1/3}{\text{Count}} = \text{weight in grs.}$$

If 12 yards of roving weigh 50 grains the hank roving is 2.00

$$(12 \times 8\ 1/3) \div 50 = 2.00$$

If 120 yards of yarn weighs 50 grains the number is 20.00

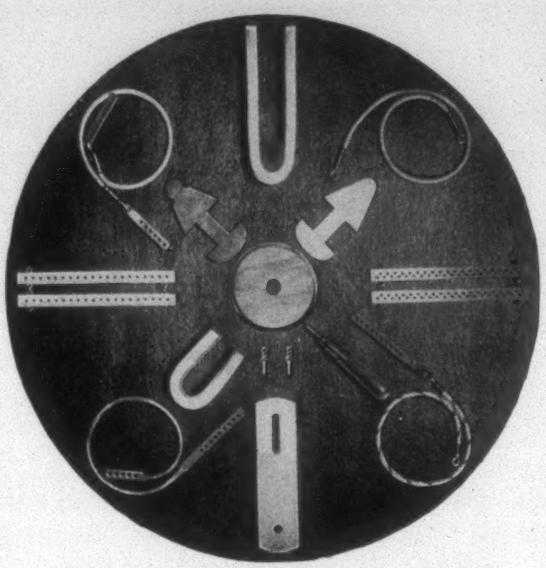
$$(120 \times 8\ 1/3) \div 50 = 20.00$$

Weights and Numbers

To change the weight per yard of sliver to hanks per pound.

$$\frac{8.3333}{\text{Weight per yard}} \quad \text{Hanks per pound}$$

Rice Dobby Chain Co.



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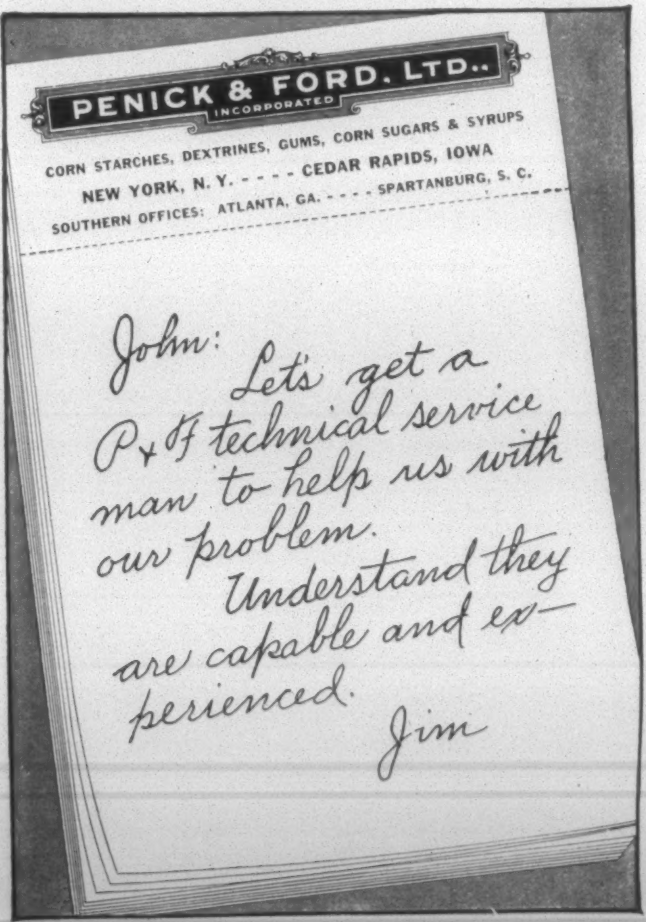

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Sliver weighing 50 grains per yard is .166 hanks per pound.

$$\frac{8.3333}{\text{Hanks per pound}} \quad \text{Weight per yard.}$$

Roving Frame Bobbin Capacity

Full Bobbin	Ounces	Full Bobbin	Ounces
12×6	44	7 ×3	8½
11×5½	32	6 ×3	7
10×5	24	6 ×2½	5½
9×4½	18	5 ×2½	4
8×4	14	4½×2½	3
8×3½	12		
7×3½	10		

Lint Consumption Up 56,653 Bales

Washington, D. C.—The Census Bureau has reported that cotton consumed during August totaled 654,503 bales of lint and 85,951 of linters, compared with 597,850 of lint and 80,090 of linters during July this year, and 630,667 and 75,338 during August of last year.

Cotton on hand August 31st was reported held as follows:

In consuming establishments, 737,962 bales of lint and 394,487 of linters, compared with 973,542 and 398,580 on July 31st this year, and 653,087 and 288,807 on August 31st last year.

In public storage and at compresses, 9,120,291 bales, compared with 9,122,178 and 81,706 on July 31st this year, and 11,829,439 and 82,106 on August 31st last year.

Cotton imported during August totaled 10,153 bales, compared with 18,254 during July this year, and 13,494 during August last year.

Exports of domestic cotton during August totaled 64,743 bales of lint and 4,210 of linters, compared with 120,388 and 4,746 during July this year and 214,541 and 33,017 during August last year.

Cotton spindles active during August numbered 22,078,162 compared with 21,916,700 during July this year, and 22,009,882 during August last year.

Cotton consumed during August included: In cotton-growing States, 563,820 bales, compared with 511,121 during July this year, and 533,898 during August last year, and in New England States, 73,140 bales, compared with 70,180 and 77,974.

Cotton on hand August 31st included: In consuming establishments, in cotton-growing States, 538,362 bales, compared with 743,226 on July 31st this year and 494,475 on August 31st last year, and in New England States, 162,635 bales, compared with 186,464 and 128,669.

In public storage and at compresses, in cotton-growing States, 9,009,189 bales, compared with 9,044,748 and 11,801,848, and in New England States, 103,488 bales, compared with 69,661 and 23,463.

B. O. Randall Patents Connector for Dobby Looms

B. O. Randall, of Gaffney, S. C., obtained a patent on a connector adapted to be placed at each end of the connecting rod between the crankshaft and the dobby arm of a loom. The mechanism comprises fittings attached to each end of the connecting rod, and the fittings are adapted to be equipped with slidable bearings holding a ball and socket joint which in turn is connected to the crankshaft and dobby arm of the loom. The fittings are each provided with a well to furnish adequate lubrication to the same.

Spinning Mills' August Operations At 90.4%

Washington, D. C.—The Census Bureau reported that the cotton spinning industry operated during August at 90.4 per cent of capacity, on a two-shift, eight-hour-week basis compared with 86.5 per cent during July this year, and 85.1 per cent during August last year.

Spinning spindles in place August 31st totaled 24,730,894, of which 22,078,162 were active at some time during the month, compared with 24,747,636 and 21,916,700 during July this year, and 25,243,366 and 22,012,186 during August last year.

Active spindle hours for August totaled 7,872,120,619, or an average of 318 hours per spindle in place, compared with 7,535,391,527 and 304 for July this year, and 7,907,811,109 and 313 for August last year.

Spinning spindles in place included: In cotton-growing States, 18,124,052, of which 16,837,108 were active, compared with 18,134,482 and 16,730,456 for July this year, and 18,299,468 and 16,594,268 for August last year; and in New England States, 5,877,106, of which 4,640,996 were active, compared with 5,884,144 and 4,581,762; and 6,145,112 and 4,791,932.

Active spindle hours included: In cotton-growing States, 6,308,825,699, or an average of 348 per spindle in place, compared with 5,995,462,101 and 331 for July this year, and 6,211,915,563 and 339 for August last year: and in New England States, 1,404,238,008, or an average of 239, compared with 1,394,155,348 and 237; and 1,539,261,897 and 250.

Active spindle hours for August and the average per spindle in place, by States, follow:

Alabama, 624,823,309 and 347; Connecticut, 113,231,078 and 217; Georgia, 1,095,022,576 and 343; Maine, 162,769,883 and 238; Massachusetts, 776,604,188 and 234; Mississippi, 28,427,874 and 189; New Hampshire, 91,248,515 and 290; New York, 79,712,741 and 241; North Carolina, 1,944,877,546 and 334; Rhode Island, 248,868,952 and 263; South Carolina, 2,172,252,685 and 385; Tennessee, 228,113,024 and 411; Texas, 70,078,616 and 296; Virginia, 152,113,235 and 238; all other States, 128,976,397 and 189.

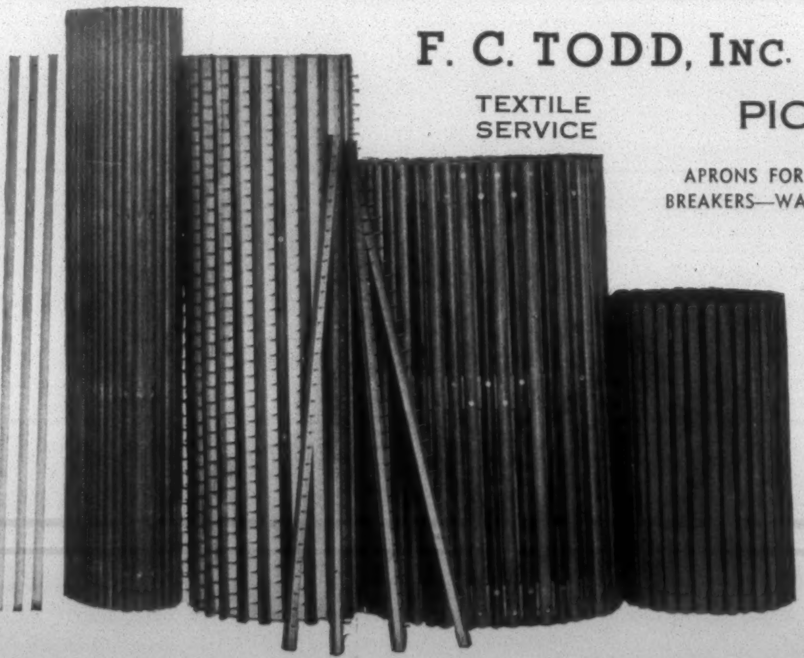
Labor Secretary Upholds Decision Against Lane Mills

Washington, D. C.—Secretary of Labor Perkins has found the Lane Cotton Mills Co., of New Orleans, to have violated the Walsh-Healey Public Contracts Act and the provisions of some 17 contracts awarded to it subject to the act, and has ordered payment to the Government of $42,166 for violations of the overtime and child labor provisions of these contracts, it was announced here. Under the Walsh-Healey Act, further Government contracts will be denied to this firm for a period of three years.

The decisions affirmed a previous ruling by the administrator of the Public Contracts Division of the Department of Labor.

Of the sum found to be due to the Government, $29,146 will be paid to employees of this company in restitution for unpaid overtime worked on Government contracts. The contracts involved were for the furnishing of such materials as denim, cottonade, suiting, twill suiting, drill, sheeting, whipcord, and tweed for the Army, Navy, Marine and Quartermaster Corps.

The decision expressly left open the question of the company's liability of six additional contracts. The question of liability on these contracts will be the subject of further consideration.



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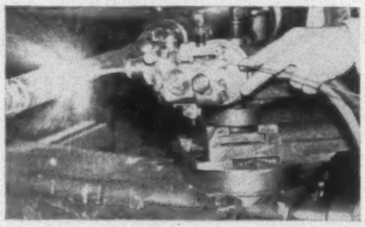

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American Cyanamid To Make Vital Chemical

New York.—American Cyanamid Co. announced recently it had undertaken large-scale manufacture of thiourea—an essential chemical used in metal, plastics, photographic, textile and chemical industries—to free the home market from dependence on foreign sources.

The company, it was said, heretofore has supplied the United States with importations, largely from Germany and England. The war has blocked most of these imports.

Two Hundred Years of the Cotton Spinning Machine

(*Continued from Page 8*)

Cartwright. Compared with the production of spinning Jennies and mules, the production was much higher on water frames and throstle frames and hence the cost of production less, the throstle frame yarns being cheaper.

Spinning with throstle frames was in principle not only used for the final spinning of yarns, but also for the preliminary attenuating processes in which the sliver of the card or the sliver of the drawing-frame was drawn out until a final roving was attained, which was suitable to be creeled on the spinning frame. A remarkable improvement in throstle frames for the preliminary roving processes was the introduction of the differential gear by Houldsworth in 1825, which allowed the driving of the spool or bobbin with a very accurate surface speed. As the diameter of the bobbin increased during spinning, the delivering of the rollers remaining constant, the speed of the bobbin had to be decreased in a bobbin lead frame or increased in a flyer lead frame successively. Other machines used for the transitional slubbing or roving process were the can frame in 1817, and the tube frame. But soon the throstle frame with the flyer spindle superseded all other machines used for the preliminary spinning process.

The Ring Frame

In America, Jenks in 1830 had developed (starting on the principle of the flyer spindle in the throstle frames and in principle hence on the machine of Richard Arkwright and Lewis Paul) a continuous working ring spindle. In this invention the flyer is abandoned and replaced by a small ear or traveller, being pulled round the ring that surrounds the spindle by the yarn. The yarn is not wound on the bare spindle as in the mule or spinning Jenny, hand and treadle-spinning wheels, but on a bobbin or at least a solid long paper tube, that can be drawn off, but revolving during spinning with the spindle.

This continuous working spinning frame—ring frame as it is properly called—became popular, especially in America and overseas countries, whereas the old classic textile centres in Great Britain and France worked for a long time with the old-fashioned mules; only latterly have these mules been replaced partially by ring-spinning frames. According to recent statistics out of 150,960,000 cotton spindles there were 109,633,000 ring-spindles and only 41,327,000 self-acting spindles. Of these latter Great Britain alone had 29,186,000 self-acting spindles but only 10,752,000 ring spindles, making a total of 39,938,000—

spinning spindles. The U. S. A. on the other hand, had out of 27,288,000 spinning spindles 26,849,000 ring spindles and only 439,000 self-acting spindles; in Japan there are out of 11,853,000 spinning spindles only 8,000 self-acting spindles, and in China there are only ring spindles, viz., 5,071,000.

As long as there were mule and ring spindles, there was a great rivalry between both systems. Evidently the ring spindles produced more and cheaper, but the mule made it possible to spin finer counts with softer twist. As long as the ring spinning frame was only used to spin coarse and medium counts and as long as a great quantity of fine yarns was needed, the mule held its ground. But in recent years ring spindles have been improved considerably and also with the latter yarns as fine as 100's and even 140's are spun with great ease and advantage. Further, the category of fine yarns to which the mules alone can be applied is now rather limited, especially due to the artificial silk that became a great competitor to fine yarns above 100's. The bulk of yarns is now spun in very much lower counts than previously, counts for which the ring-spinning frame is very much fitted. As an example it may be stated that out of 1,054,116,664 lbs. of yarn produced in 1936-37 in India only 61,851,698 lbs., that is 5.86 per cent was above 40's, the bulk being produced below 40's and in 10's to 20's. The mule is hence disappearing more and more in favour of the ring spindle, a process that has been intensified during the last decade.

Economical Effect of the Spinning Machine

The striking feature of the modern spinning machine is the great production of yarns per spindle. The spindles now revolve easily at 10,000 r.p.m. and more, and this for hour after hour, day and night, year by year. Little breakages occur and the frames work with an efficiency approximating near to 100 per cent.

The number of hands could be greatly reduced during the period described. Before 1738, one spinner could just manage with the treadle spinning wheel, one spindle and in very exceptional cases two spindles. In 1741 in the mill of Lewis Paul and John Wyatt in Birmingham, there were ten spindles to one operative or 100 workers for 1,000 spindles, including preliminary cleaning, opening, drafting operations. Successively the number of operatives was reduced and today there are many mills having but three operatives for 1,000 spindles, the operatives for the preliminary work included.

Social Influence of Spinning Machinery

Though the wages paid 100 or 200 years ago seem, compared with the rates of our days, very low, the spinners were paid relatively much better than the workers in other professions such as the blacksmith, shoemaker, baker, etc. Today the salaries of the spinners are less than those paid in many branches, especially when compared with the salaries of the metal workers.

In 1830 the great part of the workers of a spinning mill were girls and boys from eighteen years to eleven years and even to eight years. This was a great improvement when compared with the conditions prevailing 100 years ago in the time of Lewis Paul or further back in the 17th century where everyone, regardless of age and sex, worked

(*Continued on Page 42*)

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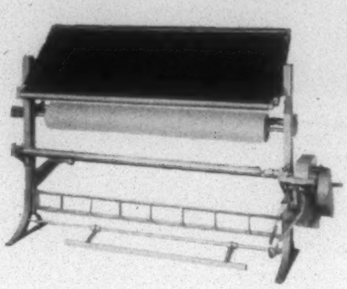

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Two Hundred Years of the Cotton Spinning Machine

(*Continued from Page 39*)

from the early morning to late at night. Such conditions seemed to be quite natural in those days. It must be pointed out that those conditions regarding the employment of very young workers, even children, was known before the introduction of the factory system in general and the spinning machine in particular. From a patent Nr. 202 in 1678 of Dereham and Haines regarding a new spinning engine we hear ". . . that a child of five or foure yeares of age may doe as much as a child of seven or eight yeares old . . ."!

Another point to be noted is the reduction of hours worked. In the middle of the 18th century there was practically no limit, at the beginning of the 19th century it was 69 hours per week, then 64 hours per week, and at the beginning of the 20th century it was reduced further to 56 hours per week; now it is only 48 hours per week, in France even only 40 hours per week. The reduction was not only the result of hard social struggles, but also of the fact that increasing efficiency of the machinery permitted it. Of course, there will be a limit to the reduction of the working time since mankind can expect results only when hands and brains are bestirred. The question is not to work more or less, but to produce cheaper as a whole and thus to reduce prices, allow an increase in consumption, an increased sale and production. And, finally, it is not leisure but work which makes for happiness.

General Outlook

The spinning machine of 1938 has developed largely out of the spinning machine of 1738 and out of the patent of Lewis Paul in particular. The present spinning machine is made on the principle that the raw material for spinning is stapled material such as wool and cotton, which form the bulk of the present textile materials. But the present spinning machine is also applicable for the spinning of cut rayon which is coming into use now in considerable quantities.

For the use of synthetic materials such as cut rayon staple fibres, the question arises as to whether this material should be cut or not, since when leaving the spinning machine in the rayon mill, the fibre forms a continuous strand which is capable of being woven directly and without any further spinning process. To cut the continuous rayon fibre into small fibres and to spin them again to a continuous thread means waste of time, energy and increased costs. When this roundabout way is abandoned our present spinning machines might become obsolete.

Of course it can only be conjectured whether, and if so, how this change will be a reality one day. Yet we must face the aforementioned possibility when speculating upon the future of the spinning process in general and to the spinning machine in particular. There have been so many changes during the last 200 years that we dare not say that a further change might be impossible; the question of the new synthetic materials delivered by the rayon mill in a continuous thread might change the whole position. Now our system of spinning seems to be more or less perfect, especially our spinning machines. Yet already some 100 years ago a famous English poet knew that ". . . Things may serve long—but not serve ever. . . ."

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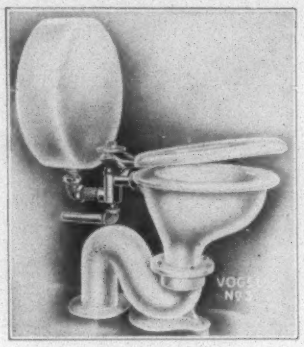

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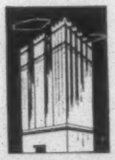

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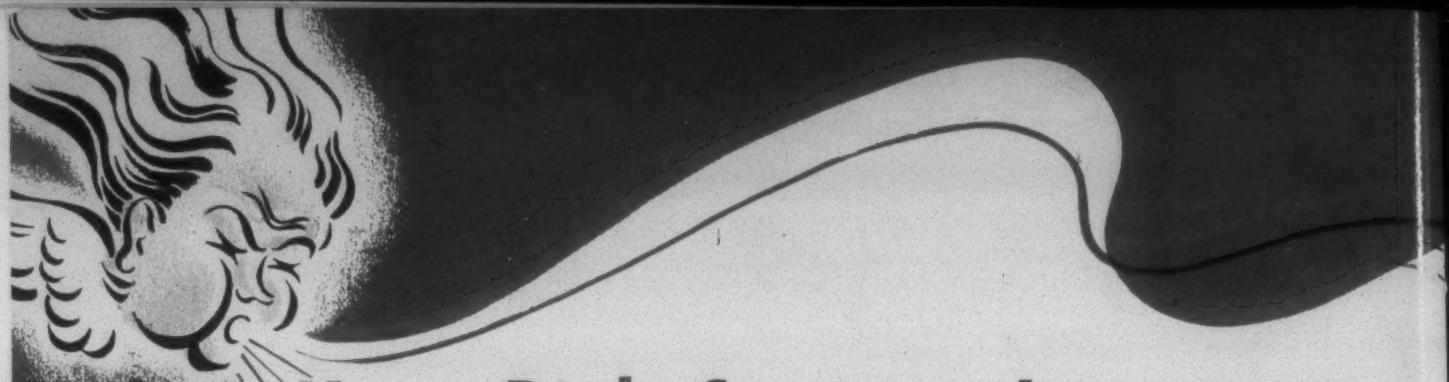

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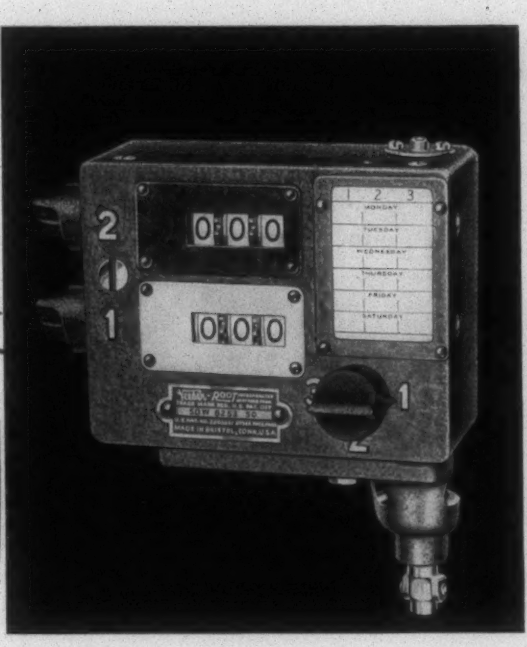

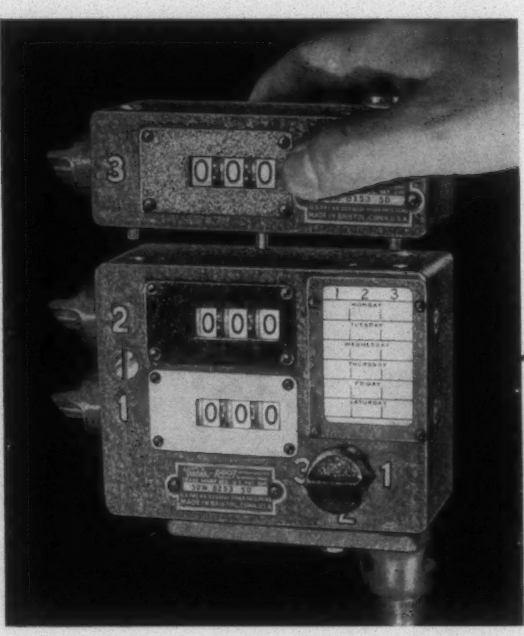

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